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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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The Coal Strike

THE gravity of the coal stoppage, which for the moment was overshadowed by the general strike, is now coming to be more clearly realised by the public as the larger issue is passing out of view. Although no actual shortage of coal on any appreciable scale has yet been felt, it is clear that before long the cessation of new supplies must have a serious effect on all other industries, for, it cannot be too clearly understood, coal is not merely one of our basic industries; it is the basic industry of all. The position at present is a deadlock. The miners, a stubborn race of workers who are capable of enduring real hardship before they give way to exhaustion, have rejected the Government proposals. It is notable, however, that the formula of their refusal to accept lower wages and longer hours is less rigid than at one time, and possibly, if they are once assured that reconstruction is to be seriously taken in hand, they may be ready to take a fair proportion of the sacrifice that the salvation of the industry may entail. The mineowners, too, have rejected the Government's terms in, if anything, an even more absolute form. Upon the Government, therefore, devolves a responsibility of unusual gravity. They represent, as Mr. Baldwin truly put it, a national interest greater than

that of either or both of the other parties. It is certain that the coal pits cannot be allowed to remain idle because owners and workers cannot come to terms. In the face of a continued deadlock, national interests must override private interests, and a nation which supported the Government against a national strike will be equally ready to support them in any steps that may be necessary to safeguard essential supplies of coal. It is to be hoped that both parties will recognise the impossible position in which their present attitude places the country. If they fail or refuse to do so, it will be for the Government to take control of the situation in the interests of the community. In that case, fortunately, they will have a united nation behind them.

Chemical Overseas Trade

THE Board of Trade returns for April show unfortunately a general if slight decline in overseas trade in chemicals, drugs, dyes and colours. As compared with April of last year, imports have increased by £20,356; comparison with April of 1924 reveals an increase of £177,025. Exports, on the other hand, show a decline of £175,939 on April of 1925 and of £163,165 on April of 1924. Exports of imported merchandise, commonly known as re-exports, are down £37,871 as compared with April of 1925, and £21,977 as compared with April of 1924. As regards exports and re-exports these tendencies agree with the general figures of national trade, but while chemical imports have increased the national imports have declined. The evidence is incontestable that owing to unsettled conditions the trade position is not being fully maintained, and the lesson for all is that peace and co-operation in industry must be re-established as an essential condition of industrial progress.

The detailed figures indicate some interesting changes. As regards imports, acetic and tartaric acids are both down on the corresponding month of last year, but the glycerine figures are substantially larger; there is a striking increase in potassium compounds, while sodium compounds are fairly stable. Alizarine imports have advanced in value from £29 to £4,250, and in other finished dyestuffs there is an increase of nearly £20,000. Natural indigo imports have more than doubled. Turning to the tables of exports, sulphuric acid has advanced from £2,087 to £7,632 in value, while the fact that the corresponding quantity figures are 1,556 and 17,625 tons indicates considerable fluctuations in price. The total export of sulphate of ammonia is down from £255,970 to £198,909, the principal loss being in trade to Spain and the Canaries, where the value has declined from £147,119 to £42,457. Coal tar products have gone up in value from £74,039 to £110,767. There is an increase in potassium

compound exports, but sodium compounds have fallen from £342,218 to £244,028. The total value of chemical manufactures and products exported is down from £1,272,393 to £1,111,940. Coal tar dyes and dyestuffs, too, have declined from £94,541 to £51,118. The total value of exported chemicals, drugs, dyes and colours is £1,701,989, as against £1,877,928 in April of last year.

Coal Supplies for Industry

THE relief which has followed the termination of the general strike has probably served to distract the attention of the public as a whole from the fact that the coal stoppage still continues and that certain industries are faced with a set of conditions which render it extremely difficult to carry on their normal operations and provide their usual service. It is, in the main, the public utility services that are faced with the hard fact that their coal stocks are dwindling day by day, and of all these services it is, perhaps, the public gas supply undertakings that find themselves in the most difficult position. The railways can readily conserve their resources by cutting their services and thereby eking out their available coal stocks. Electrical supply undertakings can to a large extent turn to substitute fuels such as coke and breeze, of which, in the larger towns, considerable supplies are available; but, deprived of coal, the domestic fuel consumer immediately turns to his supply of gas, so that the demand for the latter tends to increase as the shortage of coal becomes more acute.

For some reason or other—probably from sheer force of experience—the householder regards the supply of gas as infallible, and there can be few who stop to consider how gas can be made when the regular supplies of coal are suddenly cut off. From inquiries made amongst those connected with the gas industry, however, we feel that for whatever period the coal dispute may last there need be little fear that the supplies of this essential fuel will not be maintained. In the first place the gas industry did not fail to profit by the experience gained during the 13 weeks' strike which occurred five years ago. In nearly all cases coal stocks well above the normal maximum were being carried at the commencement of the present month, while as yet it has not become necessary to take advantage of the facilities that exist for obtaining more or less suitable coals from foreign and other sources. Moreover, the gas industry is in a degree wonderfully self-supporting from the point of view of raw materials, and when it becomes necessary to husband coal it is a matter of comparative simplicity to utilise coke in lieu of coal, to augment thereby the supply of water gas, and to avoid practically any noticeable change in heating power. So long as suitable liquid fuels are available for the carburation of the water gas so produced from coke there would seem to be no limit to the time for which the gas undertakings can continue to carry on a normal supply. It must be recognised, however, that the general upheaval of an orderly and regular routine and the substitution of emergency processes is a costly procedure, and in the event of a protracted strike there is little doubt that the consumer will at a later date have to accept some small addition to the price of the therm.

New Process for Betaine Hydrochloride

RECENTLY, we learn from an American source, a novel process of manufacturing betaine hydrochloride and glutamic acid has been developed by a Multiple Industrial Fellowship of Mellon Institute of Industrial Research, University of Pittsburg. The construction of a factory for the production of these substances is planned by the Fellowship donor. The proposed plant will produce 500,000 lb. of betaine hydrochloride annually. Hitherto this hydrochloride has been available only at a very high price, and consequently the use of it has been limited. Unique properties make it especially desirable for certain therapeutic purposes. Physiologically betaine is an inert tasteless substance which has been proved to be without deleterious action on the human system. Betaine hydrochloride is a colourless, easily crystalline solid which, upon solution in water, liberates hydrochloric acid by hydrolysis. Thus it may be considered as a solid form of hydrochloric acid which may be taken in tablets without any harmful action on the teeth. For this purpose it has been sold under the pharmaceutical name "acidol."

Another important use of this acid is as a substitute for tartaric acid in the preparation of effervescent salts of all kinds. It is especially valuable in preparations in which tartaric acid is objectionable. Betaine hydrochloride is also a potential source of trimethylamine and other methyl amines. A good yield of trimethylamine may be obtained from it simply by treatment with alkalis. The investigations concerning the properties and uses of this interesting acid are continuing at the Mellon Institute and doubtless will disclose other commercial applications of the substance.

Pulverised Fuel Risks

THE United States Bureau of Mines has lately published a timely report relating to the dangers associated with the utilisation of pulverised fuel. This system of firing, which a few years ago was a comparative rarity, has been making gradual but unostentatious progress, and although there has of late been an encouraging absence of accidents, it is just this immunity that is likely to lead to the neglect of necessary precautions. The technical development of powdered fuel systems and the practical experience gained have been such as to permit the relative safety, as compared with other systems, to be ruled out as a factor in the preliminary consideration of the choice of plant. It is, however, highly necessary to bear in mind that explosion risks are anything but negligible. The Bureau of Mines, which always seems to be on the spot when industrial problems of the kind are in obvious need of investigation, has availed itself of the opportunities presented by various accidents in America. A thorough study of the conditions under which the disasters have occurred has been made, and a number of very valuable suggestions for the reduction of risk have been drawn up. Certainly, in this country we have not been exactly quick in grasping the advantages of powdered fuel firing, but from time to time one hears of important contracts for plant of the kind, as, for example, the new power station of 40,000 k.w. capacity which is being erected by the North Metropolitan

Electric Supply Co. at Brimsdown, a detailed reference to which is made elsewhere in this issue. Fortunately, although there are quite a number of comparatively large installations now at work over here, there have as yet been no accidents worth speaking of, but this does not in any sense dispose of the fact that very rigorous precautions are essential if this immunity is to be preserved.

Among the more salient points drawn attention to in the Bureau of Mines report is the suggestion that, owing to the liability of spontaneous combustion, dried or pulverised coal at a temperature of over 150° Fahr. should never be stored in a bin for longer than 18 hours, and that the storage bins should be emptied if the plant is to be shut down for any period longer than this. Pulverised coal, of course, only becomes dangerous when stirred up into a cloud and mixed with the proper proportion of air, and in the main it is the presence of anything that could possibly constitute an igniting agent which must be guarded against. It is not, of course, possible to refer here to the closely detailed statement which the Bureau has issued, but we can strongly recommend all those who already utilise powdered coal, or who intend to do so, to obtain from the director a copy of the report.

The Late Mr. F. S. Spiers

THE unexpected death of Mr. Frederick S. Spiers, secretary of the Faraday Society and of the Institute of Physics, removes from our science organisations a quiet but distinctive figure, whose constructive work will not end with his own career. Mr. Spiers' chief interest was the Faraday Society, which he helped to found 24 years ago, and which he served with complete devotion. The success of its periodical conferences, at which specific subjects were selected and were discussed by experts from angles which together gave a comprehensive and balanced view, was largely due to his gift for painstaking organisation and orderly arrangement of detail. Nothing was overlooked from the preliminary announcements to the final publication of the papers and discussion. During the war Mr. Spiers stimulated the formation of a Nitrogen Products Committee of the Faraday Society, and as a result of this committee's reports, in part drafted by him, important researches were carried out by the Munitions Inventions Department. He also organised for the British Science Guild the successful exhibitions of British Science Products in 1917 and 1918. For his work in connection with the war he received the Order of the British Empire. Mr. Spiers was keenly interested in all forms of applied arts and at one time was engaged in the production of decorative metal work by electro-deposition. The Gold Medal and Diploma of the Franco-British Exhibition held in 1908 was awarded for some of this work. When war broke out he devoted his knowledge and energies to munitions. Mr. Spiers was a fine Hebrew and Talmudical scholar, and his love for music amounted almost to a passion. Mr. Spiers was in his fiftieth year, and all who knew him will lament the too early end of a useful and diligent life, in which courtesy and service were notable features.

Alcohol from Plums

AN interesting note reaches us from a CHEMICAL AGE correspondent at Orleans, who suggests that a further extension of the manufacture of alcohol from plums, already undertaken by some French growers, will probably take place in the near future. At a reception given by the Orleans Chamber of Commerce recently to the members of the British Fruit and Vegetable Importers' Mission, who were on a tour of inspection in the South of France and Spain, a leading French grower circulated a statement giving his opinion that the freight charges by English railway companies for plums and that class of fruit were too high. "If this state of things is going to continue," the circular stated, "we fear that the French growers will find it better to make alcohol, as some are already doing. The French consignors would then have to discontinue altogether the export of this fruit." The manufacture of alcohol from certain fruits is, of course, already carried out on a considerable scale, notably from the prickly pear in India, and this interesting development of the industry in France may quite possibly add to the available supplies of vegetable spirit. We have frequently been pained to notice the drunken condition of the autumn bee, an otherwise industrious and well-behaved worker, obviously due to its fondness for over-ripe plums. This inquisitive little researcher has long recognised the plum as a convenient source of alcoholic cocktails, which it might have continued to enjoy undisturbed if it had been more careful to conceal the effects. To save a respectable insect from moral decline and at the same time to increase the stock of vegetable spirit and incidentally to benefit the plum grower is to achieve three good objects in one operation.

Books Received

- A MANUAL OF RADIOACTIVITY. By Dr. George Hevesy and Dr. Fritz Paneth. Translated by Dr. Robert W. Lawson. London: Humphrey Milford, Oxford University Press. Pp. 252. 15s.
REPORT ON THE ECONOMIC SITUATION IN BELGIUM. By J. Picton Bagge. Department of Overseas Trade. London: H.M. Stationery Office. Pp. 148. 4s.
THE MAKING AND TESTING OF PORTLAND CEMENT AND CONCRETE. Compiled by G. and T. Earle (1925), Ltd. Wilmington, Hull. Pp. 130. 10s.
GAS AND FUEL ANALYSIS FOR ENGINEERS. By Augustus H. Gill. New York: John Wiley and Sons, Inc. London: Chapman and Hall, Ltd. Pp. 180. 8s. 6d.

The Calendar

June 1 & 2	Society of Glass Technology.	London.
2	Society of Public Analysts: "Problems in Connection with Ancient Egyptian Materials" Alfred Lucas. 8 p.m.	Burlington House, Piccadilly, London.
2	Faraday Society: Annual General Meeting and Presidential Address. 8 p.m.	University College, Gower Street, London, W.C.1.
3	Chemical Society: Ordinary Scientific Meeting. 8 p.m.	Burlington House, Piccadilly, London.
3	Royal Society: Papers by A. E. H. Tutton, T. E. Stanton, G. I. Taylor, E. V. Appleton. 4.30 p.m.	Burlington House, Piccadilly, London.
3 & 4	Iron and Steel Institute: Annual Meeting.	Institution of Civil Engineers, Great George Street, London.
3 & 10	Royal Institution of Great Britain: (I) Iron in Antiquity; (II) Science in Antiquity. Dr. J. Newton Friend. 5.15 p.m.	21, Albemarle Street, Piccadilly, London.

Shipping Conditions of the Past Year

A General Review

We give below a review, prepared by our Statistical Department, of developments and problems in the shipping industry during the past year, from the point of view especially of the merchant shipper.

The past twelve months have again shown some unsatisfactory results for British shipping, not a little of which has been due to the labour difficulties which occurred at Australian ports last autumn, coupled with other troubles such as the high prevailing costs which have in a number of instances been scarcely covered by the freight rates obtainable. On the other hand, exporters have been constantly voicing complaints through their associations respecting the heavy charges which fall upon British goods shipped overseas.

It is therefore desirable to see exactly how these charges are built up, and the first point that must be made is that throughout the past year the freight rates accepted by British shipping companies for most types of cargo have been very frequently below the similar charges made before the war. The monthly index number of shipping freights prepared by the Chamber of Shipping indicates, for instance, that in July and September of 1925 the average freights were 94.3 per cent. and 99.4 per cent. of the corresponding pre-war figure, whilst in the current year February reflected a figure below that of pre-war by 2 per cent. and March was lower by 6.5 per cent. Other months of the period under review have shown index numbers slightly higher, but on the whole the freight rates accepted have shown little possibility of further reduction.

During the present year in fact the rates have fallen to the lowest point reached for more than five years and the downward movement has occurred despite the general seasonal tendency to increase. To illustrate the point further, it has been shown by comparison with charges made by Australian ships engaged in coastwise traffic, that British charges at United Kingdom ports are anything between 60 to 70 per cent. cheaper, whilst British ships carrying between this country and the Commonwealth are charging little more than the Australian coastwise charges for distances of 800 to 1,000 miles.

It seems, therefore, apparent that high transport costs are not to be blamed against shipowners, and confirmation is to be sought in a statement of the chairman at the recent annual meeting of the Chamber of Shipping that outward freight rates from the United Kingdom last year represented only 3 per cent. of the selling price of manufactured goods.

Burden of Low Rates

The difficulties, then, seem to lie in the high cost involved in loading cargoes, and it is very certain that port charges and dock dues are in numerous districts much greater than a recovering trade demands. Not only are the scales of charges high in themselves, but they are rendered additionally burdensome by congestion at ports involving detention of shipping at enormous cost. Complaints from shippers, shipowners and stevedores in this respect are very frequent, since as a reaction British trade is penalised by the diversion of cargoes to continental ports which would otherwise be handled at British docks. Cases have in fact occurred where loading at Dutch and Belgian ports means an economy of over £200 per ship. It is therefore satisfactory to record that representations continue to be made to port authorities pointing out that initial steps by them must inevitably result in improved business at ports in this country.

The Federation of British Industries has taken up the matter of master portage rates at Liverpool and suggests the advantage which might accrue from a competitive system of charges instead of the present costing arrangement. As a consequence of such representatives some

port authorities have made reductions during the past year, such as at Southampton, where the Southern Railway has lowered tonnage dues by 5 per cent. as from March 1st last, but at several ports the question of further reduction has been postponed. At the recent annual meeting of the Tyne Commissioners, for example, their policy of reducing charges was reiterated, but nevertheless the present level of 29½ per cent. over pre-war rates was maintained. Belfast Harbour Commissioners have similarly declined further concessions, as the reductions of the last few years are involving them in a loss of £72,000 per annum, these reductions having coincided with the depression in trade. Shippers could, however, reply to this that an antidote to lower receipts by these authorities is to be found in still further reduced charges which would help to bring a trade boom. At the South Wales ports a movement is on foot to co-ordinate dock charges, and the Great Western Railway as owners of the system have prepared preliminary uniform rates, which, although apparently offering no prospect of actual reduction in charges, are an attempt to reduce delays to a minimum and thus effect considerable saving to shippers.

It seems, however, inevitable that the problem of dock charges will continue to recur, both on account of their high level which on the average is still 50 per cent. above pre-war figures, and also because many different systems of port control are in operation in this country. Some docks are owned by railway groups or private companies; others are controlled by municipal authorities or semi-public companies, and each of these has its own policy and a different method in respect of compiling charges. In some cases there is a single responsible authority which controls the whole of the dues to be collected from shippers, and in others a delegation of receipts occurs with one body collecting for the maintenance of wharves and other facilities provided, whilst the actual loading of cargoes is a matter for someone else. Hence the port rates through the United Kingdom are very varied by reason of the divergent policies of the authorities and also because some are entirely inclusive of all the services to be performed.

It is therefore misleading to compare the rates of different ports and to take an attractive rate as a basis of argument for lower rates elsewhere, since to the rate may in practice be added charges for cartage, rent and storage which belong to interests other than that of the authority fixing the port rate. The cost of these separate operations can in the long run be less economical than a high port rate.

Uniformity of International Practice

Whilst uniformity in this matter is at present rather out of the question, nevertheless it is interesting to see the progress which is being made in the shipping world in order to secure some degree of international standardisation in regulations, and particularly are the results of importance to British exporters who have to pay for the higher standards which prevail in this country.

In the past the British Government has been all too ready to impose regulations upon shipping in advance of similar legislation in other countries and the result has been that, whilst the obligations can be held to be necessary when applied to all ships, the more rapid application to British ships has constituted an onerous burden upon both owner and exporter, making overseas trade even more difficult than it need be. The Chamber of Shipping took up the matter in February last and resolved to urge all Governments to ratify and give effect to international agreements signed by their representatives in order that

traders of no one country may suffer. This was further adopted at the International Shipping Conference held in London last month, and progress in this respect may now be expected. It becomes especially imperative in order to give effect to the decision of the Brussels Conference that State-owned shipping shall be placed in the same legal position as private lines instead of enjoying the previous immunity from maritime liens and mortgages.

Underwriters are also active in attempting to secure some uniformity of marine insurance policies in order to simplify procedure. Among other things the development of the International Union of Underwriters is going ahead. During the past few months, moreover, the Institute of London Underwriters has been working to bring various clauses in policies up to date, and has resolved that future changes shall come into effect only on January 1 and July 1 each year, and this offers a more convenient practice for both broker and assured. Two new clauses which have been under consideration are the Institute clauses of Strike Risk and Dangerous Drugs. Another aspect of significance to exporters is the discussion proceeding between London underwriters and fire insurance companies in order to determine the relative liabilities in these cases of double insurance against fire where the casualty occurs to goods, whether on board or after discharge. Liverpool underwriters have already commenced an agreement in this connection, though at present relative only to insured raw cotton, that a rateable proportion should be paid by each class of insurer, and this principle is very helpful in eliminating questions as to where the liability rests, so that its extension to other classes of traffic is to be desired.

Improper Use of Clean Bills of Lading

Another shipping problem which is of importance to exporters and has come prominently into discussion during the present year is that of the improper issue by shipowners of clean bills of lading. At the beginning of 1926 the point was thoroughly considered in banking circles owing to statements by members of the British Bankers' Association that they were uncertain whether to discount bills of exchange against bills of lading purporting to represent sound goods. This association, in a memorandum to its members, recorded that they considered it as an objectionable practice to issue clean bills against an indemnity by the consignor, where the goods were obviously not in good order and condition. The practice is reputed to be growing in some quarters, but it is certain that marine underwriters endeavour to discountenance it. Marine insurance is, of course, a contract of the utmost good faith and calls for the fullest and frankest disclosure of every material fact. Unless the underwriter waives his right to knowledge of the indemnity it seems that concealment would render the whole policy void and therefore non-existent.

The publicity which has been given to the discussion has been followed by meetings of the Chamber of Shipping to determine the shipowners' stand in the matter. These latter regard themselves as the unwilling victims of circumstances, since they are frequently pressed by exporters to issue clean bills notwithstanding that the goods covered by the bill may not be in good order and condition, and unless they decide to accede to the exporters' wishes it is probable that the business will be lost to British lines.

The Chamber of Shipping report was therefore to the effect that existing commercial conditions do not permit the abolition of indemnities although it is desirable to reduce their number, and further that it is impossible to incorporate a clause in bills of lading of sufficient scope to provide an alternative to indemnities. The main positive suggestion of importance to exporters was that all indemnities should be notified to underwriters, in order to ensure that a claim may be fully met if the casualty

provided against does occur. These considerations have since been further adopted by the London Conference in April, although there it was urged that a substantial question as to quality and quantity of goods must always be noted on the face of the bill.

Another matter which appeared on the agenda of the last mentioned Conference related to the question of "Shipped Bills of Lading" and "Received for Shipment Bills." These latter are a feature which received an enormous impetus from the conditions that prevailed during the postwar boom in trade, when the scramble for ship's space was of such consequence that niceties in the form of the bill of lading, used as acknowledgment of the goods, were considered to be a minor essential. It is, however, felt that some trades still have a use for these, and that less abuse exists here than in the case of the ordinary "Shipped" bills which are being demanded before the relative goods are put on board, a practice which shipowners are recommended by the Conference to discourage.

Chemicals in South Wales

Review of the Year's Progress

DURING the last twelve months the sulphuric acid industry, which is the chief branch of the chemical industry in South Wales, has shared the relative prosperity of the tinplate trade on which it chiefly depends. Demand has been good and prices have been maintained, although a considerable fall in prices is expected in the immediate future. The call for vitriol for use in the production of copper sulphate as a by-product of the nickel industry has also been good. The other branches of the trade have not been so fortunate. Two important products, superphosphate and sulphate of ammonia, have experienced a very restricted market, and, in the case of superphosphate, conditions have been unsatisfactory. The continued and increasing fall in foreign exchanges enables the French and Belgian makers to ship this product in small cargoes to various little ports round the Welsh coast at prices well below the home makers' cost of production at works, according to *The Times Trade Supplement*.

Swansea was formerly a great centre for copper sulphate production, but the only plant that can be said to survive is one where it is produced in the course of the extraction of nickel. Sulphate of iron, too, is now only made as a means of using up the waste acid liquors from the pickling process in the tinplate industry, and even then only in places where local conditions prevent this liquor from being drained away.

The process for the manufacture of sulphuric acid from the sulphur gases arising from the calcination of zinc blende is now in course of rapid development. At Llansamlet the acid plant of the National Smelting Co., Ltd., is being considerably enlarged. By new processes and improved plant the difficulty of eliminating impurities, such as arsenic, in the direct course of manufacture instead of by a subsequent operation has now been overcome, and vitriol in every way suited for the tinplate trade is being produced at a very low cost. The huge plant of the same company at Avonmouth started operations during the year.

Sulphuric Acid Production Prospects

While a cheap source of supply of sulphuric acid cannot fail to be of advantage to South Wales generally, the outlook for the present vitriol works is far from hopeful. The removal of the sulphur from the blende by combustion is an essential part of spelter smelting operations, and its cost can be borne by the metal, the sulphur gas being thus delivered free of cost to the acid plant. The acid maker who has to buy his sulphur bearing material, pay for its transport from port, prepare and calcine it before he produces the sulphur dioxide gas, cannot hope to compete successfully with this enormous handicap, and the closing down of several of the existing plant seems inevitable. Even from the point of view of the acid consumer this prospect is to be regretted, as his supply will depend upon another industry which may, from lack of raw material, inability to work at a profit or other cause, be forced to suspend or cease operations, and another and immediate supply of an acid of suitable purity might well be difficult to find.

The Cost of the Strike

To the Editor of THE CHEMICAL AGE.

SIR,—We have for a short period had our industrial and commercial system held up, but restored by the common sense of our people. Such a hold-up will not occur again, in all probability, within this generation; but the probability will be increased if the loss can be estimated and brought home to the vast majority. The direct loss is almost entirely the loss in wages of workers who went out or were deprived of work by those who went out. To get at this figure we have to take 16,000,000 workers and guess at the number who actually were stopped. I take this at about 2,000,000, allowing for volunteers, at a wage (allowing for women, boys, and girls) of 40s. per week; this would be £8,000,000 in all. The direct loss to industry is as yet small, provided the coal question is settled at an early date. My reasons for thinking this are as follows: few, if any, factories have been working lately at full production, and those that have been stopped will soon overtake demand, if there is real peace. But the total demand will be reduced by the £8,000,000 already referred to, and the loss of profit on that will be, say, £1,000,000. There is a further loss in the case of continuous processes, through the cost of restarting. This is considerable for individual concerns, but in the absence of details as to the steel and iron industry I cannot give a figure.

The retail trade has apparently suffered badly, but the same argument applies as for industry. The bulk of trade will come back, except the profit on the £8,000,000. I recognise that there has been vast Government expenditure, but the money has gone principally to those who will put it into circulation, and cannot, I think, be added to the total of lost wages. Taking everything into account, I put the direct loss at £12,000,000 to £15,000,000, mainly borne by the strikers and their victims. To estimate the indirect loss is mere guesswork, but it is not enormous, again assuming that the coal industry resumes within a fortnight or so.

Some foreign business must have been lost; on paper this might be 20 millions sterling, but both exporters and overseas consumers had made considerable provision for a coal stoppage, and about one-third of that sum is probably nearer the figure. Against this, the prestige of Great Britain has been enormously enhanced by the way she has faced the crisis, and the myth that she is played out is scotched throughout the world. My final estimate, therefore, of the true loss to the nation of the general strike is from 20 to 25 millions sterling.

This, on average, is 10s. per head of the population, but averages are very deceptive, and all sorts of people will be hurt in all sorts of ways. The main burden will be borne by the strikers and their families, and their unfortunate fellows who were dragged into it, with their families. The fundamental strength of the nation has been manifested, and a general strike will never again happen.—Yours, etc.,

MAX MUSPRATT.

The Grange, Fulwood Park,
Liverpool.

A Chemist's View of the Coal Crisis

To the Editor of THE CHEMICAL AGE.

SIR,—Mr. Baldwin's opinion that there is no prospect of a settlement by mutual agreement between the coal owners and their employees, and that some third party must effect a settlement for them, may be founded on the politico-economic fact that the industry is no longer self-supporting, and hence can no longer support both the capital and the labour engaged in it. Since the war the increase of wages and allowances, of materials and of transport, of taxes and rates, of insurances and welfare-work, of the cost of living for those who do not receive wages, and of the value of money, has been defrayed out of some fund. If we ask ourselves out of what fund have all these increased costs been defrayed, we must reply that the capital value of the undertaking has been diminished by that amount. An industry which has a capitalised value on a stabilised 10 per cent. return loses half its capitalised value if the return becomes stabilised at 5 per cent. If the industry can pay no dividend whatever, and is never likely to pay one again, its capital value has been destroyed. Hence, in the coal-mining industry, unless prices

of coals can be raised proportionally, every increase in the cost of production and every deduction from profits (such as income tax) is ultimately paid by deduction from the capitalised value of the industry. When this value has been reduced to nothing, then taxes cease, employment ceases, and the whole engagement comes to an end.

The present high costs of living are mainly due to the fact that in many industries all this accumulation of increased costs and taxes has been passed on to the consumer by raising the sale value of commodities. But, in the case of coal, this is impossible; for the export value of coal is determined by world prices which the producer cannot control, and if our home prices of coal were to be increased, the industries of the whole of Great Britain would be brought to a standstill. Hence, the long-continued process of piling on costs and taxes has struck a death-blow to the industry of coal mining. Sympathy for miners thrown out of work, or suffering reductions in wages, or for investors who see the value of their securities destroyed, is estimable, but sympathy for widespread suffering will not heal the ills due to Governmental extravagances and uneconomic legislation, or place the industry upon a paying basis.

The latest proposal for a "settlement" is that the whole of the profits of every colliery should be allocated to payment of wages before any reduction in such wages becomes admissible. But if the industry is, as a whole, unproductive of profit, the proposal defeats itself, and would only apply to a few undertakings. These in their turn would, in some cases, join the list of unprofitable ventures, and a further destruction of capital values would take place. No one can tell how many years this state of affairs might last, or when, if ever, it might end.

Who, then, is in the meantime likely to find money for the development of our coal measures? The taxpayer may shake his head, but how can he escape from the toils? The Government have already provided £2,000,000 for the development of the Kent collieries, more than £7,000,000 for the "Coal Subvention" in 1921-22, somewhere about £25,000,000 for the "Subsidy" of 1925-26, and it is inevitable that further assistance in some form must be granted for an indefinite period. It is useless for us to live in a fool's paradise over this coal business. Our Governments, by reducing the hours of labour and piling on fresh costs, have made it impossible to carry on the industry, and it is they who must support it in its present indigent position. We may therefore agree with Mr. Baldwin that a third party must come in to effect a settlement, and must be provided with the funds needed for enabling the industry to be carried on, or at least some detrimental legislation to be abrogated.—Yours, etc.,

A. W.

Metallic Substitutes for Wood

To the Editor of THE CHEMICAL AGE.

SIR,—About three years ago you published a letter in which attention was drawn to the possibility of constructing almost every part of the detail and fittings of railway coaches, charabancs and motor vehicles generally of metal or metals combined with other non-combustible or mineral materials. There is no difficulty in the case either of movable carriages or houses in replacing nearly all the woodwork, and the upholstery to a very great extent, by metallic substitutes. Asbestos and its rival slag wool have not yet come into the full use they deserve. In many cases slag wool is quite as efficient as asbestos wool and much cheaper. Ornamentation and colour can be applied to metals quite as satisfactorily and easily as to wood and cotton or other fabrics.

These details, however, were not the main incentives for my letter. Freedom from fire risk was the first, and next lightness—which can be secured much more easily by metal construction.

All these metal and non-organic parts of vehicles and houses can be made here of home produced material. The query may arise "is this letter about chemical matters?" The reply very decidedly is "yes." The metals we can, and should, use in place of much of the woodwork and "materials" are all chemical substances and are produced here. I allude to steel, brass, zinc, aluminium, and tinned ware. Cushions and that kind of thing can be made of metallic wire gauzes

as well as of cotton thread. Packings and stuffings and the like can be done with asbestos and in very many cases with slag wool quite as well as with horsehair, feathers, wool, etc. The employment of aluminium in places as door panels and frames where little strength is required is extending. Nearly all these metals can be ornamented by enamelling or coating, lacquering, electro-plating, or heat colour, and finally it is much easier to build non-resonant or non-noisy metal structures than ones of wood, and at the same time the former are lighter and stronger.

Motor vehicles of the present day, cars, and especially the so-called charabanc carriages, are ridiculously heavy. Certainly one-third of this deadweight can be avoided by the judicious use of steel and other metals.—Yours, etc.,

W. R. HODGKINSON.

Blackheath, S.E.

Dyestuffs Manager as Engine Driver

AMONG the earliest volunteers for national service during the strike was Mr. Joseph H. Deacon, managing director of Grays Dyes and Colours, Ltd., Essex, and his record is one of considerable interest.



On Tuesday, May 4, he volunteered to serve as an engine driver on the L. & N.E. Railway and was given a trial on the same day at King's Cross loco sheds. On the following day he was appointed a driver and up to the end of the strike he drove without mishap eight types of engines, and transported over 10,000 passengers and 3,000 tons of goods between King's Cross and Peterborough on the main line and worked the local services between King's Cross and New Barnet, High Barnet, and Gordon Hill. He had as his assistants two medical students who after the first two local journeys fired with such success that they did not lose a minute

on the schedule time throughout the whole of the strike.

New Boiler Plant Extensions

THE new boiler plant to be installed at the Brimsdown electricity station of the North Metropolitan Electric Supply Co., Ltd., London, is another example of the remarkable developments taking place in steam generation. It is claimed that about 88 per cent. efficiency will be obtained. The contract has been obtained by the International Combustion Co., Ltd., of London, and the plant will include five "Babcock and Wilcox" boilers of 10,032 square feet heating surface, fitted with radiant heat superheaters, operating at 325 lb. per square inch gauge pressure and 750° F. superheated steam temperature. The last figure is regarded as the limit with ordinary steels, and the next advance in this connection depends upon the metallurgical chemist. "Lopulco" pulverised fuel will be fitted throughout, including overhead bunkers, the new "Lopulco" rotary steam driers, "Raymond" pulverisers, cyclone separators, variable speed pulverised fuel feeders, and fishtail burners. The combustion chamber for each boiler will have a volume of 8,100 cubic feet, and is to include the "Lopulco" water screen on the usual lines at the bottom of the setting so as to prevent slagging of the ash, and the "Murray-USco" water-cooled fin tube for the two side walls, this being supplied by the Underfeed Stoker Co., Ltd. The design of these fin tubes is already familiar, and the total heating area of the equipment in the boiler combustion chambers will be 514 square feet, the rated evaporation of each complete boiler unit being 100,000 lb. per hour, with a long overload duty of 120,000 lb. This corresponds to 12,750 lb. of coal per boiler hour, with 16,000 lb. overload, of an average medium quality of coal 10,000 B.Th.U. per lb. 20-25 per cent. ash and 15 per cent. moisture.

Society of Public Analysts

AN ordinary meeting of the Society was held at Burlington House on Tuesday, May 18, Mr. E. R. Bolton, President, in the chair. Certificates were read for the first time in favour of Messrs. F. H. Banfield, M.Sc., Ph.D., A.I.C., and A. L. Williams, A.I.C. Certificates were read for the second time in favour of Messrs. A. Barraclough, B.Sc., A.I.C., G. G. Elkington, K. M. Griffin, M.Sc., A.I.C., H. Firth, A.I.C., and T. Pickerill, B.Sc. The following were elected members of the Society: Messrs. J. Allan, M. T. Casey, B.Sc., G. H. Davis, J. Grant, M.Sc., A.I.C., and Miss M. M. Ruston, F.I.C.

Abstracts of Papers

In a paper on "The Detection and Determination of Glycerin in Tobacco," Mr. A. Chaston Chapman, F.R.S., said that the tobacco was mixed with sodium sulphate (to absorb moisture) and extracted with acetone. The residue from the extract was freed from resins, and its glycerol content determined by a modification of Zeisel's silver iodide method. For a qualitative test, the glycerol was separated by extraction and distillation, and identified by (1) the acrolein test; (2) formation of dihydroxyacetone; and (3) formation of glycerol- α -naphthylurethane.

"The Crystalline Bromides of Linseed and Some Other Oils" were described by Mr. H. Toms, M.Sc., A.I.C. The most insoluble bromide of linseed oil, as crystallised from ethyl acetate, was not an ethyl ester, but a glyceride. When hydrolysed with hydrobromic acid, it yielded, as its only recognisable product, hexabromostearic acid, but this did not prove the absence of tetrabromostearic acid. The insoluble bromides of perilla, candlenut and Para rubber seed oils were also prepared, and found to be identical with the linseed oil bromide. Tetralin was a better solvent than ethyl acetate for crystallising oil bromides.

In discussing "The Polarimetric Determination of Sucrose in Condensed Milk," Mr. A. Bakke and Paula Henegger described a modification of the method of Revis and Payne, in which mercuric nitrate was used both as precipitant and as inverting agent. Results agreeing with the gravimetric results were obtained in the winter months, but there was a discrepancy in summer due to such causes as altered period of lactation, period of fresh grass feed, etc., on the original milk. To prevent this, the quantities were made up to definite weight after dilution, instead of being diluted to a known volume.

An Iron-Iridium Separation

A paper on "The Separation of Iridium from Iron," by Dr. W. R. Schoeller, gave an outline of some of the proposed methods of separation, and it was shown why they had not been found suitable in analytical practice. The author favoured a method based on the precipitation of ammonium chloroiridate, and answered objections brought against it. In his procedure, an allowance was made for the amount of iron adsorbed by the ammonium chloride precipitate.

A colorimetric method for "The Determination of Very Small Quantities of Iron" was described by Mr. H. L. Smith, B.Sc., F.I.C., and Mr. J. H. Cooke, M.C., B.A., A.I.C. In this method the sensitiveness of the thiocyanate reaction was very greatly increased, and directions were given for obtaining all the reagents free from iron. Zinc interfered, and for determining iron in zinc compounds the iron thiocyanate was extracted with a suitable solvent, such as a mixture of amyl alcohol and ether, and the colour of the extract matched.

"The Determination of Total Alkaloids, Sugar, and Oily Substances in Opium" was discussed by Mr. J. N. Rakshit. In the method described, both the alkaloids in an aqueous extract of opium and those remaining in admixture with the opium wax were determined. For the determination of sugar titration with Fehling's solution after removal of alkaloids was found to give fairly concordant results. Added oil or wax was indicated by a saponification value differing from that of opium wax, and was approximately determined by the appearance of the opium when heated on a plate over steam.

CAST IRON HOUSES to the number of 250 are, it is reported, being constructed for the Corporation of Derby, and 2,000 are being built in Scotland. The iron used in their construction has been tested by the Department of Scientific and Industrial Research, which has reported favourably on its resistance to moisture and non-conductivity to heat and cold.

Manuring of Grass Land

Lessons from Continental Experiments

A GREAT deal of interest has been created in this country by the results of the German experiments on the intensive system of manuring grass and meadow land. These experiments, initiated by Professor Warmbold at Hohenheim in 1916, have resulted in a greater stock-carrying capacity of the pasture land of South Germany, and consequently an increased output of milk, beef, and mutton per acre. Incidentally, the Germans have also, under this intensive manuring system, increased the yields and improved the quality of their meadow hay.

The system of grassland management advocated by Professor Warmbold is briefly as follows:—Phosphates and potash (and lime where necessary) are applied during the autumn, and the first dressing of nitrogen is applied at the end of January or beginning of February. This early application of nitrogen stimulates the growth of the grasses, and the pastures are ready for stocking from 15 to 25 days earlier than usual. The fields are then grazed in sections varying in size from one to eight or ten acres each. In the early spring (March) sheep are allowed to run over all the plots, and at the beginning of April they are taken off and grazing commences with the milk stock. Each plot is stocked with a sufficient number of cows to eat it down in three or four days, and dry cows or other horned cattle may be used to follow up the milk stock and complete the grazing of each plot. The grazing is more easily controlled under this sectional method, and the grass on the different plots can be kept at varying stages of growth by varying the time of applying the nitrogen. Three and sometimes four dressings of nitrogen were given throughout the season in the continental pasture experiments, with very successful results. Prior to 1916 one-and-a-half acres per cow were required at Hohenheim for the normal grazing season, but in less than two years under the intensive manuring system only slightly over half an acre (0.52) was required per cow, which meant that the stock-carrying capacity had been practically trebled. The yield of milk per acre had increased in the same time by 168 per cent.

A Yorkshire Experiment

In order to ascertain how far the results obtained on the Continent may be applicable under English conditions a number of experiments have been arranged and are now in progress in different parts of this country. In Yorkshire a grazing trial is being carried out on Mr. W. Brunton's farm, Tollesby, Marton. In this experiment 27 acres have been fenced off into six plots, three of five acres and three of four acres with water laid on. Phosphates, potash, and Billingham carbonate of lime were applied during the early winter and nitrogen in the form of sulphate of ammonia at 1 cwt. per acre was applied to each plot on various dates between the beginning of February and the end of March. From the middle to the end of March two of the plots were grazed with ewes and lambs (39 ewes and 44 lambs). The sheep were then taken off and 26 milk cows were turned on to the plots at the end of the first week in April. The number of cows has had to be steadily increased, and to-day there are 40 milk cows and eight dry cows being grazed on the plots. It is of the utmost importance that each plot should be stocked when the grass is about 4 in. high. If allowed to get beyond this stage the plots readily become patchy. The keynote of success in this system is *early and heavy stocking*.

The intensive manuring has resulted, therefore, in grass being available for the dairy cows fully a month earlier than usual. This is a fact of great economic significance. The saving effected here in expensive concentrated foods is enormous because the young succulent grass provides for maintenance and three gallons of milk. Only cows giving over three gallons of milk per day require to have concentrated food supplied, and it is easy, therefore, to calculate the tremendous advantage of having grass available so early in the season. Another adjoining pasture field on this farm which was formerly about three weeks earlier than the land under experiment was this year between three and four weeks *later* than the plots which had been intensively manured.

Several of the plots have now received their second dressing of nitrogen (1 cwt. per acre sulphate of ammonia) and a chemical analysis of the herbage is being made each time the plots are grazed. In spite of this heavy dressing of nitrogen

there are no indications so far of any depressing effects on the clovers, but on the contrary they appear to be stronger and more vigorous than ever.

This Yorkshire experiment is full of interest for English farmers as there are already clear indications that results may be expected on very similar lines to those obtained on the Continent. Another trial of a similar nature is in progress on Sir Alfred Mond's estate at Melchet Court in Hampshire.

R. L. ROBB.

Transport of Smelling Salts

IN the Mayor's and City of London Court, before Judge Shewell Cooper, on May 20, a claim was made by the British Commercial Transport Co., Ltd., 20, Ropemaker Street, London, against Mr. T. J. Sanderson, trading as Sanderson and Co., c/o A. L. Chamacy, 71, Eastcheap, for £14 4s. 6d. return of money paid at the request of the defendant.—Mr. Leon, for the plaintiffs, said that as carriers they were instructed to carry certain smelling salts, which arrived from Germany, to Bateman and Co., in London. The goods upon being tendered to Messrs. Bateman were refused, as the result of a letter received from the defendant, dated August 17. The plaintiffs carried out the work and paid Customs duty, the amount sued for becoming due to them. Many applications were made for payment which had been promised, but the account had not been settled.—Mr. Charles J. Long, manager of the plaintiff company, gave evidence in support of the claim.—Mr. Sanderson, in evidence, said that he only acted as agent for the manufacturers of the goods, the Pharmaceutical Industries Co., and therefore did not consider himself liable for the plaintiffs' account.—The defendant, in answer to the Judge, said that in writing to the plaintiffs on August 17, "Please do not trouble Messrs. A. J. Bateman, but we will pay duty and charges and take them into stock," he was writing on behalf of the manufacturers, and their name should have appeared upon the notepaper.—The Judge: I suppose there will be no difficulty in your recovering anything you may have to pay the plaintiffs from the Pharmaceutical Co.—The witness replied that he did not suppose there would be, but he could see no reason why all the goods should not have been returned as had been requested.—The Judge said that the defendant had expressly authorised the plaintiffs to do certain work which they had carried out, and there was really no defence.—Judgment was entered for the plaintiffs, with costs.

Spanish Restrictions on White Lead

THE *Gaceta de Madrid* publishes a Royal Order which prohibits the use in Spain in the interior painting of buildings, as from November 1, 1928, of white lead, sulphate of lead, and products containing these pigments. Certain exceptions to this prohibition are made by the decree, and further exceptions will be laid down later by the Government. The prohibition does not extend to white pigments containing not more than 2 per cent. of metallic lead. The decree also provides that, as from the date of its promulgation, white lead, sulphate of lead, and products containing these pigments may only be manipulated in the form of paste or of paint prepared for use. Receptacles containing white lead, sulphate of lead, or paints with a lead base must be conspicuously labelled with the words "contiene plomo" (veneno)—containing lead (poisonous).

Ceramic Society

At the annual meeting of the Ceramic Society held at Stoke-on-Trent, the annual report stated that there was a membership of 675. A joint meeting of the Refractory Materials' Section and the Pottery Section, which should have been held at Newquay this month, will take place there probably in September. The attention of members was directed to the need for more contributions dealing with practical problems, directed more towards opening discussions on difficulties in factories. The Council acknowledged with thanks the kindness of the Governors of the Central School of Science and the Council of the Chemical Society, London, in placing rooms at their disposal for meetings. The officials were elected as follows: President, Mr. George Turner (to succeed Mr. A. G. Richardson); vice-presidents, Mr. B. J. Moore, Mr. D. F. W. Bishop and Mr. George Price; secretary, Dr. J. W. Mellor.

Reactions of the Strike

By Sir Ernest Benn

AFTER a hard week's work struggling to clear up the muddle of the strike and to disentangle all the threads that have been twisted by a fortnight's stoppage, I had the privilege of meeting Colonel House, the friend of President Wilson, to welcome him on his arrival in England. Colonel House's first remark to me was simple, direct and definite: "The general strike," he said, "has put England once again right on top of the list of the nations of the world. The whole world is lost in admiration of England and the English." Such a statement coming from such a quarter is worth repeating and worth noting, and worth thinking about. For my part I do not doubt that Colonel House is right. If we can only divest our minds of the details of the last fortnight and think in the "Colonel House" way, we see the truth of this extraordinary statement.

Teaching the World

Let us go back and get our perspective right. The nineteenth century was occupied by us in teaching the whole world how to do things, in founding modern trade and commerce, and in lifting the human race from a condition bordering upon barbarism to the condition represented by modern civilisation. What England meant to the world for the hundred years 1800-1900 can only be appreciated by a close examination of the point of view of distant lands. For the last twenty-five years we have been busy losing that reputation. Politics have got the upper hand of us and the world in general, and America in particular has taken the view that we are down and out and finished. The letters of Walter Page will leave no doubt in the mind of anyone on this point. Then latterly we have had this threat of a general strike which the rest of the world sees very clearly—although we do not—as revolution. General strikes anywhere else but here mean bloodshed, barricades, and changes of Government, if not of constitution. So that when the general strike was called in England the whole world jumped to the conclusion that the period of decadence had run its course, and that we were finished. The headlines in the American newspapers in the first few days of the strike make quite clear the conclusions which America drew—as it has proved—too early. That was, in a few sentences, the general position, and then we had this dreaded revolution. It lasts nine days; we have little or no bloodshed; not a single shot is fired; no excitement worthy of the name occurs; we all behave like gentlemen and gentlewomen; strikers and special constables amuse themselves by playing in rival teams at cricket; we look things over, we get things right, and inside a fortnight we are back at work. No such exhibition has ever been given to the world, no such triumph is possible in any other place in the world, and the effect upon the whole world has been electrical and salutary. Colonel House is perfectly right in saying that the strike has put us back at the top of the list of nations.

Effect of Strike Threats

The reactions of the strike, both at home and abroad, in labour camps and in business circles, cannot—it seems to me—be anything but good. I am not for one moment minimising the awful cost of it all, the distress and poverty and bankruptcy which it has spread all around, and the actual physical setback given by it to the current business of the moment. But the threat of the general strike has gone.

Commerce is a long-winded affair. Business, even little bits of business, always have a long history; that is one of the things that strikers are now discovering. You cannot blow a whistle and stop work, and blow another whistle and start work—things are not done in that way. There are seven ages in the life of man, and there are seventy ages in the life of a business transaction spread over three main periods. There is the period of planning, the period of financing, and the period of marketing, and for a long time past a large proportion of our trade has failed to materialise because at some point in the course of these lengthy processes the necessary confidence has been shaken by the awful threat of the general strike.

British Association of Chemists

The Question of Registration

IN discussing this question it is important that terms should be defined and that registration should be clearly understood. There are in existence at the present time two forms of professional registration one of which might be described as the registration of monopoly and the other that of definition.

Of the first it may be stated at once that the profession of dentistry is an example. No person who is not a registered dentist may practice, severe penal clauses being now in existence to protect the dentist, and definitely to confine all dental operations to those legally included within the profession. This is registration of monopoly.

The case of the medical profession is different. Upon obtaining the recognised diplomas a doctor is licensed to practise as a physician and surgeon. But persons who are not physicians may, without legal let or hindrance, practise medicine, though they may not, of course, describe themselves as physicians or surgeons. In fine, legal powers have been obtained to define a physician and surgeon, but no powers expressly to limit the performance of medical or surgical operations to the qualified. That is registration of definition.

To endeavour to obtain a monopoly for the chemical profession is probably impossible, and at least from some points of view undesirable. No person ought to be able to practise regularly, or to be employed as a chemist unless he possess qualifications approved by a properly constituted body, but those who might, in exceptional cases, be able to devise processes—in fine, any kind of inventor—should be permitted to do so. Such inventions stand or fall by their utility, but chemistry, if only occasionally, might experience a great loss by prohibiting activities of this kind.

An argument frequently advanced against registration is the statement that it will effect nothing. The majority of chemists are employees, and those who are employers will set their own standard of qualification. But the fact that the public employed and still employs the quack in medicine did not prevent the doctor from protecting himself. On the contrary, this was one of the reasons why recourse was had to registration. The contention that because an evil exists, it is useless to make any attempt to remedy it, is one that should not find much support among intelligent and enlightened men. After registration has been effected there are some who will probably continue to make a choice outside the registered ranks, but it would be no small inconvenience for an employer to appoint anyone whose certificates would not be recognised and who could not in any circumstances confer with a professional chemist.

Effects

It is unquestionably true that from some points of view registration would effect very little for some years, but there would be two very important and more or less immediate results. The profession would become highly organised once and for all; and it would in a very short space of time take its place with the professions of law, medicine, and dentistry. These two considerations are in themselves sufficient to make it highly desirable that chemists should do all that is possible to give effect to a measure of registration at the earliest possible moment.

In this connection it is not inappropriate to allude to the fact that the architects are shortly to present a registration bill to Parliament and that other professions are considering similar action. It is exceedingly undesirable that the profession of chemistry should lag behind in this important matter since with every day it becomes increasingly evident that to unite and produce by this means a corporate professional consciousness is becoming the aim of every profession whose activities are indispensable to the community.

There are doubtless objections—some of them may be legitimate—which can be raised against organisation and self-government, but the forces set in this direction are of enormous strength and resistance to them is foredoomed to failure.

H. T. F. R.

Chemical Trade Returns for April

Decline in Exports and Re-Exports

THE Board of Trade returns for April (which is a short month and includes the Easter holidays) show an increase in the import of chemicals, drugs, dyes, and colours over April, 1925, of £20,356, a decrease in exports of £175,039, and a decrease in re-exports of £37,871. Taking the first four

months of the current year, as compared with the first four months of 1925, chemical imports have declined by £144,415, exports by £466,337, and re-exports by £67,304. The following tables give the quantities and values for the months of April, 1925 and 1926:—

Imports						Bleaching Powder . . . cwt.				35,661	20,024	17,846	10,945
Quantities.						Value.				COAL TAR PRODUCTS—			
1925. 1926. 1925. 1926.										1,979 1,561 1,055 753			
						£ £				Anthracenecwt. 19,588 21,027 1,616 1,888			
CHEMICAL MANUFACTURES AND PRODUCTS—										Benzol and Toluol galls. 10,547 9,317 18,204 14,595			
Acid Acetictons 1,097 560 52,814 28,097										Carbolic Acidcwt. 4,331 4,113 387 306			
Acid Tartariccwt. 4,719 4,383 23,365 21,087										Naphthalenecwt. 1,173 764 949 634			
Bleaching Materials „ 5,590 5,063 8,901 6,286										Tar Oil, Creosote Oil, etc. galls. 1,115,066 2,193,600 33,719 67,571			
Borax „ 3,830 5,140 3,744 6,287										Other sortscwt. 29,085 67,745 18,109 25,020			
Calcium Carbide . . . „ 52,911 49,893 36,499 34,048													
Coal Tar Products, not elsewhere specified													
value — — 80,193 74,798										Totalvalue — — 74,039 110,767			
Glycerine Crude . . .cwt. 224 500 610 1,430										Copper, Sulphate of . . .tons 5,675 6,264 130,463 132,909			
Glycerine Distilled „ 207 932 774 4,821										DISINFECTANTS, ETC. .cwt. 30,729 20,501 77,636 72,767			
Red Lead and Orange Leadcwt. 2,368 4,747 4,861 9,234										Glycerine, Crude „ „ 3,936 822 11,653 3,306			
Nickel Oxide „ 4,064 3,051 20,891 16,965										Glycerine Distilled „ „ 7,567 6,732 31,987 37,024			
Potassium Nitrate „ 11,001 16,799 12,073 17,859										Potassium Chromate and Bichromate . . .cwt. 1,578 1,338 3,488 2,476			
Other Potassium Compoundscwt. 257,725 644,268 56,020 142,698										Potassium Nitrate (Salt-petre)cwt. 797 1,817 1,623 3,531			
Sodium Nitrate „ „ 168,719 156,678 108,451 99,380										All other sorts „ 4,152 5,598 11,156 12,126			
Other Sodium Compoundscwt. 24,458 27,307 20,547 18,365										Total „ 6,527 8,753 16,267 18,133			
Tartar, Cream of „ „ 5,009 5,186 18,280 18,069										Sodium Carbonate . . .cwt. 666,025 304,269 153,216 94,759			
Zinc Oxidetons 884 986 30,410 34,950										Sodium Caustic „ 133,314 136,746 105,821 96,693			
All other sorts . . .value — — 245,080 279,232										Sodium Chromate and Bichromatecwt. 2,755 4,504 4,797 6,432			
DRUGS, ETC.—										Sodium Sulphate . . . „ 63,432 32,556 11,650 5,038			
Quinine and Quinine Saltsoz. 114,553 81,483 11,558 7,943										All other sorts „ 47,230 36,652 66,734 41,106			
Bark Cinchona . . .cwt. 3,010 1,871 14,338 7,869										Total „ 912,756 514,727 342,218 244,028			
Other sortsvalue — — 170,176 167,856										Zinc Oxidetons 165 133 6,891 5,843			
DYES AND DYESTUFFS—										All other sortsvalue — — 294,113 258,715			
Intermediate Coal Tar Productscwt. 6 1 101 36										Total (other than Drugs and Dyestuffs) value — — 1,272,393 1,111,940			
Alizarine „ 4 131 29 4,250										DRUGS, ETC.—			
Other sorts „ 1,888 2,986 45,428 64,634										Quinine and Quinine Saltsoz. 123,472 122,398 15,437 15,721			
Cutch „ 7,131 8,741 13,819 17,780										Opiumlb. 260 276 513 447			
Other dyeing extracts „ 6,023 2,444 19,563 6,618										All other sorts . . .value — — 229,035 216,339			
Indigo Natural „ „ 33 78 706 1,819										Total „ — — 244,985 232,507			
Tanning Extracts „ 160,568 93,108 161,156 85,535										DYES AND DYESTUFFS—			
PAINTERS' COLOURS AND MATERIALS—										Products of Coal Tar			
Barytes, ground . . .cwt. 81,151 60,102 18,864 15,375									cwt. 9,989 5,771 88,896 46,118			
White Lead (dry) „ „ 9,167 15,138 19,681 29,479										Other sorts „ 3,872 2,606 5,645 5,000			
All other sorts . . . „ 81,303 80,988 115,480 111,977										Total „ 13,861 8,377 94,541 51,118			
Total of Chemicals, Drugs, Dyes, and Colours . . .value — — 1,314,421 1,334,777										PAINTERS' COLOURS AND MATERIALS—			
Exports										Barytes, Ground . .cwt. 2,101 15,428 1,055 5,665			
Quantities.						Value.				White Lead (dry) . . 7,320 5,392 18,971 12,014			
1925. 1926. 1925. 1926.										Paints and Colours, Oil or Watercwt. 40,800 41,794 92,605 98,588			
						£ £				Paints and Enamels „ 23,416 30,787 82,751 95,774			
CHEMICAL MANUFACTURES AND PRODUCTS—										All other sorts . . . 37,955 54,616 70,627 94,383			
Acid Sulphuric . . .cwt. 1,556 17,625 2,087 7,632										Total „ 111,592 148,017 266,009 306,424			
Acid Tartaric . . . „ 701 915 3,862 5,099										Total of Chemicals, Drugs, Dyes and Coloursvalue — — 1,877,928 1,701,980			
Ammonium Chloride tons 241 186 7,361 5,863										Re-Exports			
Ammonium Sulphate —										Quantities.			
To Francetons 199 — 2,587 11										1925. 1926. 1925. 1926.			
Spain and Canaries tons 11,296 3,493 147,119 42,457										£ £			
Italy „ 33 75 438 888										CHEMICAL MANUFACTURES AND PRODUCTS—			
Dutch East Indies tons 693 1,653 9,503 21,262										Acid Tartariccwt. 61 164 380 991			
Japan „ 2,900 5,431 36,350 69,386										Borax „ — — 1 — 3			
British West India Islands (including Bahamas) and British Guianatons 1,005 304 13,068 3,991										Coal Tar Products value — — — 373 439			
Other Countries „ 3,319 4,845 46,905 60,914										Glycerine Crude . . .cwt. — — — —			
Total „ 19,445 15,711 255,970 198,909										Glycerine Distilled „ — — — —			
										Potassium Nitrate „ „ 67 84 117 143			
										Sodium Nitrate „ „ 7,118 2,902 4,660 1,906			

	Quantities.		Value.	
	1925.	1926.	1925.	1926.
Tartar, Cream of .. cwt.	932	870	£ 3,901	£ 3,452
All other sorts ... value	—	—	41,510	18,425
DRUGS, ETC.—				
Quinine and Quinine Salts	7,810	18,011	1,007	2,309
Bark Cinchona cwt.	631	525	4,430	5,107
All other sorts ... value	—	—	60,341	38,798
DYES AND DYESTUFFS—				
Cutch	1,325	3,288	2,100	4,956
Other dyeing extracts .. cwt.	710	39	4,102	299
Indigo, Natural	11	3	318	74
Tanning Extracts... ..	3,650	9,461	4,236	8,888
PAINTERS' COLOURS AND MATERIALS.....cwt.	1,405	1,652	5,915	6,546
Total of Chemicals, Drugs, Dyes and Colours value	—	—	133,820	95,949

Canadian Chemical Industry in 1925

Preliminary Summary Report

CANADA'S chemical industry showed substantial progress in 1925. The production by the 511 plants reporting in 1925 was valued at \$114,831,880, an increase of 6 million dollars over the reported value of sales in the preceding year. The capital employed remained practically unchanged at 126 million dollars. Materials cost nearly 3 million dollars more at a total of \$57,000,429. Employment showed little change; 13,973 workers earned \$17,596,561 during the year. In Canada's foreign trade there were substantial gains both in the imports and the exports of chemicals. Total imports for the year of chemicals and allied products had a value of \$27,653,819 as compared with a total of \$24,565,574 in 1924. In the export field there were important gains in the fertiliser and heavy chemical groups, and appreciable gains were made in the exports of soap.

An analysis of the trend of Canada's external trade in chemical products shows that the value of imports in this class from the United States made up 66 per cent. of the total brought in from all foreign sources: 16 per cent. of the value of purchases represented goods from the United Kingdom; the balance or 18 per cent. was chiefly derived from Germany, France, Netherlands, Chile, Belgium, Switzerland, and the Argentine. There was an increase in the relative value of chemical products exported from Canada to the United States in 1925 and a decrease in the percentage shipped to the United Kingdom. Prices of chemical products declined slightly during the year. Based on 1913 prices as 100, the Bureau of Statistics' index number on chemicals and allied products, which showed an average of 161.8 in 1924 declined to an average of 157.1, with only slight variations from month to month.

Coal Tar and Its Products.—Production, valued at \$3,100,988, included creosote oils and other special oils, pitch, refined tar, cresylic acid, tarred felts, roofing cement, disinfectants, and insecticides as principal products.

Acids, Alkalis, Salts, and Compressed Gases.—The production of industrial chemicals such as sulphuric, hydrochloric and nitric acids, caustic soda, salt cake, calcium carbide, cyanamide, phosphorus, and industrial gases such as oxygen, hydrogen and acetylene, forms the foundation of the chemical industry in Canada. Forty plants in this industry, representing a capital investment of \$35,640,753, furnished employment to upwards of 2,400 workers during the year, and converted \$12,887,308 worth of raw materials into finished products valued at \$28,546,765, an advance of 2.3 million dollars over the total value of the output in 1924. Large scale operations and localisation of production within easy reach of the consuming market are characteristics of the heavy chemical industry in any country.

Explosives, Ammunition, Fireworks, and Matches.—There was a slight shrinkage in the value of products made in the explosives industry in 1925 in comparison with the records of the preceding year. Imports of explosives into Canada during the year were valued at \$354,842, and exports in the same period reached a value of \$154,078. Investigatory

work in recent years has shown the feasibility of using lower priced explosives in many fields, and it is probable that, although the value of the output in 1925 was less than the total reported for the preceding year, the actual volume of production in the explosives industry in Canada was greater than in 1924.

Fertilisers.—In a review limited to the consideration of the industry as represented by those plants which produce mixed fertilisers as their main product, only a partial survey of the industry as a whole is available. In 1925, thirteen plants in this class, representing a capital investment of \$2,068,936, employed about 200 men and produced commodities valued at \$1,307,430. This total showed a slight gain over the corresponding total of \$1,277,145 reported in 1924.

Medicinal and Pharmaceutical Preparations.—Plants for the manufacture of medicinal and pharmaceutical preparations were in operation in six provinces in 1925, but the industry is fairly well centred in Ontario, Quebec, and Manitoba. There were 120 plants in operation in 1925 as compared with a total of 104 in the preceding year. Production for the year was valued at \$13,843,154 as against \$13,350,347 in 1924.

Paints, Pigments, and Varnishes.—Production in the paints, pigments, and varnishes industry in 1925 reached a value of \$21,900,808, or 1.7 million dollars above the valuation placed on the output in 1924. Materials cost 12.3 million dollars in 1925 as against 11.6 million dollars in the preceding year.

Soaps, Washing Compounds, and Toilet Preparations.—In 1925, Canada's 88 plants in the soaps, washing compounds, and toilet preparations industry produced commodities valued at \$17,633,905 from materials worth slightly in excess of 10 million dollars, and furnished employment to upwards of 2,000 persons.

Inks, Dyes, and Colours.—The inks, dyes, and colours industry includes all concerns producing printing and writing inks, as well as a variety of other products such as dye soaps, mortar colours, shingle stains, hat colours, caramel, mucilage, and paste. In 1925 there were 27 plants, and their production was valued at \$2,765,618.

Wood Distillates and Extracts.—Output values once again receded in the wood distillation industry in 1925 to a total value of \$1,981,368 as against \$2,283,422 in 1924 and \$2,743,295 in the preceding year.

Miscellaneous Chemical Industries.—In addition to all the other industries reviewed in the preceding paragraphs there were 119 plants producing chemical products of various kinds in Canada during 1925. The output of these factories reached a value of \$10,784,202 from materials which cost \$4,955,571. Nearly 1,700 persons were employed.

Chemical Matters in Parliament

Skilled Sugar Beet Workers

Mr. Guinness (House of Commons, May 20), replying to Sir J. Pennefather, who asked whether any workers in the sugar beet factories were regarded as skilled; and, if so, the number of such men employed permanently in the different sugar beet factories and in the refineries respectively of the country, said that the number of workers in recognised skilled trades employed permanently in the nine beet sugar factories operating last season was approximately 400. The number of skilled workers employed in British refineries was estimated at 1,934. The two figures were not strictly comparable, for in refineries a number of process workers were regarded as skilled, whereas in beet sugar factories such workers were generally regarded as non-skilled. Five further beet sugar factories would be operating in the coming campaign.

Home-Grown Beet Molasses

Mr. Churchill (House of Commons, May 20), replying to Mr. Duckworth, circulated the official report regarding the amount of Excise Duty received up to the end of April, 1926, from home-grown beet sugar factories, on molasses manufactured from home-grown beet during last season. The amount was nil on molasses containing 70 per cent. or more of sweetening material, £17 on that containing less than 70 and more than 50 per cent., and £2 on that containing not more than 50 per cent. Molasses containing less than 45 per cent. of sweetening material was not separately distinguished for purposes of Excise Duty.

From Week to Week

SIR W. H. BRAGG, F.R.S., will receive the honorary degree of D.Sc. at the forthcoming Encænica at Oxford.

MR. DAVID MILNE WATSON, M.A., LL.B., D.L., Governor and Managing Director of the Gas Light and Coke Co., has had conferred upon him the honorary degree of Doctor of Laws of the University of Leeds.

THE DEATH OCCURRED on May 21st of Mr. James Eric Howe, a young analytical chemist of Sheffield, as the result of injuries received a few hours earlier in a motor collision. Some mystery surrounds the accident, and the police are instituting inquiries.

A FATAL ACCIDENT OCCURRED on Thursday, May 20, at the works of Burnard and Alger, Ltd., manufacturers of chemical fertilisers and sulphuric acid, Cattedown, Plymouth. John Beer, one of the workmen, got crushed between the buffers of a goods train and died ten minutes after admission to hospital. At the inquest a verdict of accidental death was returned.

THE SECOND PRIESTLEY MEDAL, bestowed every three years by the American Chemical Society upon a chemist for outstanding achievement, has been awarded to Dr. Edgar F. Smith, former provost and professor of chemistry of the University of Pennsylvania. The presentation to Dr. Smith will be made at the Philadelphia meeting of the American Chemical Society in September.

THE NAME OF THE LATE PROFESSOR EMIL FISCHER, recognised as one of the world's greatest chemists, has been restored to the list of honorary members of the American Chemical Society upon recommendation of the Society's Council. Professor Fischer, who died during the war, repudiated before his death the manifesto signed by about ninety German professors, artists, men of letters, and others justifying Germany's war policy.

THE UNITED STATES COURT of Customs Appeals has decided against the Government in the case of the United States v. Sandoz Chemical Works. The issue in this appeal was whether, in ascertaining the weight of coal-tar dyes for dutiable purposes, standards established by the Secretary of the Treasury are applicable to importations made prior to the time such standards were established. The importers protested that such standards did not apply to dyes previously imported, and the Board of General Appraisers sustained the protest.

SPEAKING OF VOCATIONAL TRAINING at the annual conference of the Association of Teachers in Technical Institutions, Lord Riddell said that education in elementary, secondary and central schools should have a vocational direction. He further pointed out that teachers in primary and secondary schools must realise that business and industrialism were necessities, and that, although engaged in teaching, teachers were part and parcel of the industrial world, and it was their duty to prepare their students for the lives they would have to live and not ideal lives.

THE GERMAN METALWORKS ASSOCIATION has been informed by Herr Koenig, a high Government official, that although a large number of works in Westphalia had had to close down in the past six months, the movement in this area had not yet reached its culminating point. A considerable number of notices of intention to close down, he said, had recently been forwarded to his department. The managers of many of the big Westphalian works were of opinion that production in the area was too dear owing to the heavy cost of transport. Herr Koenig predicted that hundreds of thousands of workers who years ago had migrated to the Ruhr region would ere long have again to seek new fields of labour.

APPLICATIONS ARE INVITED for the following appointments:—At the Manchester College of Technology, for a lecturer in tinctorial chemistry and dyestuffs, and a lecturer in bleaching, dyeing, printing and finishing, the appointments rendered vacant by the resignations of Dr. F. M. Rowe and Mr. J. Huebner. Salary in each case according to qualifications (June 21).—At the Indian School of Mines, Dhanbad, for a professor of chemistry and assaying. Age not over 35 years. Pay, for officers of non-Asiatic domicile, Rs.750-50-1,250 a month, plus sterling overseas pay of £30 a month. Forms of application from the Secretary to the High Commissioner for India, 42, Grosvenor Gardens, London, S.W.1. (June 25).

A MARKET FOR FERTILISERS is indicated by the report of the Estonian Consulate-General in London, who states that imports of fertilisers in 1925 were considerably larger than in the previous year. The principal items included superphosphates, 24,560 metric tons; salts, 5,786.1 tons; Thomas phosphates, ground, 3,900 tons; Chile saltpetre, 844.5 tons; Thomas phosphate, not ground, 500 tons; sulphuric acid ammonia, 288 tons. The bulk of the imports came from Sweden, Holland, Belgium and Germany. The two chief fertiliser exports were phosphorites, 97.1 tons, and raw bones, not ground, 70.6 tons, went chiefly to Finland and Latvia. Most of the imports of feeding stuffs came from Germany, the Soviet Union, the United States, and Argentina, while recipients of exports included the United Kingdom, Sweden, Germany, and Finland.

NEW YORK'S DRUG AND CHEMICAL CLUB recently opened new headquarters on the 13th floor of the National Board of Fire Underwriters' Building, 85, John Street, New York City.

A PRIZE in pure chemistry, in memory of the work done by Professor J. B. Cohen in the University of Leeds, will be instituted by means of a sum of £197 10s., which has been subscribed by a few friends of the professor.

THE I.G., the new German chemical trust, has declared a dividend of 10 per cent. on its ordinary share capital of 641,600,000 marks. The dividend on the ordinary shares of the component companies in the previous year was 8 per cent.

CHEMICAL WARFARE was discussed at the Congress of the Royal Institute of Public Health at Bristol. Lt.-Col. C. A. J. A. Bule-Foole stated that it would be impossible to distinguish the civil and military population in the future, and it would be the business of the whole nation to repel attacks made by enemies on their forces.

AT THE SIXTH SESSION of the Institute of Politics organised by the American Chemical Society for July 29-August 26, at Williams-town, Mass., lectures will be delivered by Sir J. C. Irvine, St. Andrews University, on "Chemistry in World Progress," by Mr. A. Mendelssohn-Bartholdy, Hamburg, on "The European Situation," and by Mr. Nicholas Politis, Paris, on "Disarmament and Security."

THE ANGLO-SCOTTISH BEET SUGAR CORPORATION, LTD., and the West Midland Sugar Company, Ltd., have awarded cash prices to the following sugar beet growers in connection with last year's crop:—Colwick Factory: 1 (£50), F. Buck, Spalding; 2 (£40), H. Carter, Holbeach; 3 (£30), R. Garner, March; 4 (£20), J. Swales, Hatfield, Hull. Spalding: 1 (£50), C. Smith and Co., Gorberton; 2 (£40), G. Anderson, Long Sutton; 3 (£30), J. Walpole, Pinchbeck, Spalding; 4 (£20), A. Pake, Holbeach.

THE DIRECTORS of the Deal and Walmer Gas Company, acting under the advice of their consulting engineer, Mr. G. Anderson, of Anderson Brothers, 5, Victoria Street, Westminster, have placed a contract with the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd., for the supply of an installation of continuously working vertical retorts, having a carbonising capacity of 49 tons per day. The installation will be complete with the necessary coal and coke handling plant, coke storage hoppers and screen, and waste heat boiler.

AT THE 400TH ANNIVERSARY of the Boteler Grammar School, Warrington, Dr. J. G. Adami (vice-Chancellor of Liverpool University) referred to the list of distinguished scholars and chemists the school had produced. Priestley, he said, who discovered more new gases (including oxygen) than all his predecessors combined, inaugurated his studies upon fixed air in a Warrington brewery, and in Warrington took his first steps towards inventing soda-water. Interesting, was it not, that still to-day Warrington excelled in brewing and in applied chemistry? Some of the best and most original work in modern chemistry had emanated from its midst, thanks to Dr. E. Frankland Armstrong and his staff.

DR. F. M. ROWE, D.Sc., F.I.C., has been elected by the Council of the University of Leeds to the Chair of Colour Chemistry and Dyeing in the University as from October 1 next, in succession to Professor A. G. Perkin, F.R.S. Dr. Rowe is a graduate of the University. He has held appointments with Joseph Crosfield and Sons, Ltd., Warrington, and as lecturer in Dyestuffs in the University and the College of Technology at Manchester; and in 1926 he was appointed Reader in Tinctorial Chemistry and Dyeing in the latter University and College. He was awarded the Dyers' Company's Gold Research Medal in 1925. He is the author of a number of papers on pure chemistry, coal tar, intermediate products, dyes, and dyeing published in scientific and technical journals. He is also the editor and compiler of the *Colour Index*, published by the Society of Dyers and Colourists, Bradford, and is a member of the Council and Publication Committee of the Society.

Obituary

MR. RICHARD ISHERWOOD, one of the pioneers of the heavy chemical industry in the Widnes, St. Helens, and Cheshire districts. Mr. Isherwood was in his eightieth year.

DR. E. S. REYNOLDS, Emeritus professor of clinical medicine at Manchester University and consulting physician to the Manchester Royal Infirmary, at the age of 65. During an epidemic of so-called alcoholic poisoning in Manchester, Dr. Reynolds had a large share in the discovery that the poisoning was due to the adulteration of beer with arsenic.

MR. FREDERICK S. SPIERS, best known for his work as secretary of the Faraday Society, which he helped to found in 1902, and of the Institute of Physics, founded in 1920. He was born in October, 1875, and was a son of Dayan B. Spiers, Judge of the Jewish Ecclesiastical Court. He was educated at the Central Foundation School, Finsbury Technical College, and South Kensington. His qualifications included B.Sc.(Lond.), Associate of the City and Guilds Institute, Associate of the Institution of Electrical Engineers, Fellow of the Institute of Physics, and O.B.E. He was unmarried. Reference is made to his death in our editorial note.

(Continued from p. 480)

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Abstracts of Complete Specifications

- 250,287. HETEROCYCLICAL COMPOUNDS CONTAINING ARSENIC OR ANTIMONY, PROCESS FOR THE PRODUCTION OF. A. Binz, Chemisches Institut der Landwirtschaftlichen Hochschule, 42, Invalidenstrasse Berlin N.4, and C. R  th, Rangdorf bei Berlin (Kreis Teltow), Germany. Application date, October 30, 1924.

These compounds are prepared from heterocyclic compounds of the pyridine, quinoline, or isoquinoline series by converting diazotisable amino derivatives of such compounds into diazo compounds and causing these compounds to react with arsenites or antimonites or the free acids. The products can be converted into oxides of the arsenoxide type by treating with reducing agents, and the oxides may be converted into compounds of the arseno-benzene type, or the acids may be reduced directly to these compounds. The arseno-benzene type of reduction product may be treated with an oxidising agent such as hydrogen peroxide to obtain the corresponding oxide or acid in a purified form. The reducing agents employed may be hydrosulphites, bisulphites or hypophosphorous acid. The starting material may contain substituents, *e.g.*, the hydroxyl group, amino group, carboxyl group, substituted or unsubstituted phenyl group, halogens, etc. The arsenic or antimony can be introduced in neutral, acid, or alkaline solutions.

In an example α -oxy- β' -nitropyridine is reduced to α -oxy- β' -aminopyridine and diazotised in hydrochloric acid solution by adding sodium nitrite. The diazo solution is added slowly to a solution of sodium arsenite. The liquid is made slightly alkaline, and allowed to stand to complete the reaction. The arsenic acid is obtained by the usual method for the preparation of aromatic arsenic acids. Other examples are also given.

- 250,289. WATER GAS FROM LIQUID HYDROCARBONS, PROCESS FOR OBTAINING. M. Brutzkus, 25, Rue St. Didier, Paris. Application date, November 10, 1924.

Processes are known for splitting mineral oils, coal tar, and other hydrocarbons of high molecular weight into hydrocarbons of lower molecular weight by introducing them into the cylinder of an engine with steam or other gas which is at a high temperature and pressure. On reduction of pressure, the hydrocarbons react with the steam to produce hydrocarbons of lower molecular weight. In this invention the temperature of the steam is increased above 1,000° C. so that the carbon which is set free combines with the oxygen of the steam to form carbon monoxide and liberate hydrogen. During the suction stroke of the engine, superheated steam at a temperature of one atmosphere and temperature of 400° C. is drawn in, and during the compression stroke is compressed with about 30 atmospheres and temperature of about 1,200° C. The liquid hydrocarbon is then gradually injected during the expansion stroke by compressed air in sufficient quantity to burn 10-15 per cent. of the hydrocarbon. The partial combustion provides the necessary heat. The resulting gases are expelled during the exhaust stroke. The process yields a water gas rich in hydrogen.

- 250,398. TANNING SUBSTANCES, MANUFACTURE OF. Farbwerke vorm. Meister, Lucius, and Br  ning, Hoechst-on-Main, and G. Kr  nzlein, Staufenstrasse, Hoechst-on-Main, A. Voss, 11, Thalstrasse, Hoechst-on-Main, and H. Gartner, 24, Hauptstrasse, Hoechst-on-Main, Germany. Application date, April 24, 1925. Addition to 211,145 as modified by 240,003.

Specification No. 211,145 (see THE CHEMICAL AGE, Vol. X, p. 417) describes the treatment of resinous condensation products derived from phenols with aralkyl-halide sulphonic acids, and the treatment of condensation products obtained from aralkyl-halide sulphonic acids and phenols with substances capable of transforming phenols into resins. In Specification No. 240,003 (see THE CHEMICAL AGE, Vol. XIII, p. 426) the aralkyl halide sulphonic acids are replaced by other

aromatic or aliphatic sulphonic acids containing halogen which is capable of being exchanged. In this invention similar tanning substances are obtained by using an aromatic or aliphatic compound containing one or more sulphonyl groups capable of being exchanged, *e.g.*, a sulphonyl group in a side chain. If the starting substance contains one or more sulphonyl groups in the nucleus, the product is water-soluble, but if it contains no sulphonyl group in the nucleus, this must be introduced subsequently by sulphonylation or treatment with sulphite. The products can be used as tanning substances without any additions. In the second mentioned method, the treatment with the resinifying agent may be omitted if the condensation product of the phenolic substance and the compound containing sulphonyl groups is heated above 100° C. to produce a further condensation.

In an example, sodium 2-oxy-naphthalene-6-sulphonate is treated with sulphite and formaldehyde to obtain the sodium salt of 1- α -sulpho-methyl-2-oxy-naphthalene-6-sulphonic acid, and an aqueous solution of this is mixed with a resinous condensation product from phenol and formaldehyde, and caustic soda. The mixture is heated in an autoclave for six hours to 120°-150° C., and the solution obtained is acidified to liberate the combined sulphurous acid, which may be expelled by evaporating. The condensation product is a viscous substance which is soluble in water to a clear solution which can be used as a tanning agent. Some other examples of the process are given.

- 250,453. ADDITION COMPOUNDS OF HYDROCYANIC ACID AND METAL CHLORIDES, PROCESS FOR THE PRODUCTION OF. H. Stoltzenberg, M  ggenburger, Schleuse, Hamburg, Germany. Application date, August 15, 1925.

Addition compounds of hydrocyanic acid and ferric chloride or aluminium chloride are obtained by treating the anhydrous metal chloride with gaseous hydrocyanic acid in a vessel or rotating drum cooled to -5° to 0° C. The quantity of hydrocyanic acid employed is that corresponding to the composition of the compound, *e.g.*, $\text{FeCl}_3 \cdot 2\text{HCN}$. The reaction takes place under atmospheric or slightly higher pressure, and the product is in powdered or granular form which keeps for a long period without decomposition, and may be used as a source of hydrocyanic acid.

International Specifications not yet Accepted

- 247,588. EMULSIONS. I. G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. (Assignees of Farbwerke vorm. Meister, Lucius, and Br  ning, Hoechst-on-Main, Germany.) International Convention date, February 11, 1925.

An aromatic or partially hydrogenised aromatic sulphonyl acid containing aralkyl residues or aryl residues together with aliphatic residues of any kind, is used as an emulsifying agent. Sulphonyl acids specified are those from benzyl-butyl-naphthalene, phenyl-butyl-naphthalene, amyl-butyl-benzyl-naphthalene, benzyl-butyl-tetraline, and cyclo-hexyl-benzyl-naphthalene, and those obtained by a joint sulphonylation of oleic acid, savonette oil, naphthenic acid, etc., with aromatic hydrocarbons such as those of the type of phenyl- or aralkyl-naphthalene occurring in high-boiling tar oils. Examples are given of emulsions for adding to tanning solutions, oiling tanned hides, wetting and cleaning purposes, and for use as disinfectants.

- 248,332. PHOSPHORIC ACID. W. Kyber, 10, Liliencronstrasse, Steglitz, Berlin. International Convention date, February 25, 1925. Addition to 242,650.

Phosphorites are treated with silicates and carbon at high temperature in a shaft furnace as described in specification 242,650 (see THE CHEMICAL AGE, Vol. XIV, p. 82) and the gases containing phosphorus are oxidised by a gas containing carbon dioxide at 1000°-1300° C. in a recuperator or Cowper stove. Flue gases, lime-kiln gases, or the burnt generator gas obtained in this process may be used.

LATEST NOTIFICATIONS.

- 251,229. Process of manufacture of phosphoric ethers of carbohydrides and polyvalent alcohols. Soc. Chimique des Usines du Rhone. April 27, 1925.
- 251,244. Production of carbon. A. Lederer. April 24, 1925.
- 251,264. Manufacture and production of organic compounds from coal, tars, mineral oils, and other like materials. I.G. Farbenindustrie Akt.-Ges. April 25, 1925.
- 251,266. Manufacture of dyestuffs capable of being chromed. Soc. of Chemical Industry in Basle. April 25, 1925.
- 251,267. Manufacture of basic chromium salts. I.G. Farbenindustrie Akt.-Ges. April 24, 1925.
- 251,270. Manufacture of cyclic hydrocarbons. I.G. Farbenindustrie Akt.-Ges. April 24, 1925.
- 251,293. Manufacture of indigoid dyestuffs containing sulphur. Farbwerke vorm. Meister, Lucius, and Brüning. April 9, 1924.
- 251,294. Manufacture of water-soluble condensation products. I.G. Farbenindustrie Akt. Ges. April 23, 1925.
- 251,303. Manufacture and production of solutions and plastics. I.G. Farbenindustrie Akt. Ges. April 24, 1925.

Specifications Accepted with Date of Application

- 232,568. Continuous production of gas mixtures rich in unsaturated hydrocarbons, Process for. T. Goldschmidt Akt.-Ges. April 15, 1924.
- 234,458. Continuous manufacture of esters of the fatty or the aromatic series, Method for. Soc. Anon. des Distilleries des Deux-Sevres. May 24, 1924.
- 235,540 and 251,188. Monocyclic ketones with more than nine ring members, Process for the preparation of. M. Naef et Cie. June 16, 1924, and May 18, 1925.
- 237,626. Base-exchanging substance for removing iron, manganese, calcium, and magnesium from water, Process for the preparation of. Nordiske Natrolith Actieselskabet. July 25, 1924.
- 238,889. Active carbon, Process for the production of. Metallbank und Metallurgische Ges. Akt.-Ges. August 20, 1924.
- 244,036. Separation of liquid mixtures by distillation, E. Merck December 8, 1924.
- 250,991. Heat treatment of oxidised copper ores. J. C. Moulden, B. Taplin, and Metals Production, Ltd. October 29, 1924.
- 251,019. Non-deliquescent body from sulphite cellulose, Manufacture of. A. G. Bloxam (Akt.-Ges. für Anilin Fabrikation). January 22, 1925.
- 251,117. Purification of petroleum, benzene and benzole hydrocarbons, their homologues and the like. Ges. für Wärmetechnik and A. Ufer. May 21, 1925.
- 251,124. Hydrogen, Manufacture of. W. P. Rogers. May 29, 1925.
- 251,140. Trisazo dyestuffs, Manufacture of. O. Y. Imray (Farbwerke vorm. Meister, Lucius, and Brüning). June 24, 1925.
- 251,142. Distilling carbonaceous materials. M. J. Trumble. June 29, 1925.
- 251,147. Production of bornyl esters from pinenes or mixtures containing pinenes for the manufacture of camphor. V. Isajev. July 23, 1925.
- 251,171. Concentrating ores and other materials, Process for. E. C. R. Marks (Ellis Flotation Co., Inc.). October 12, 1925.
- 251,310. Ferric oxide, Production of. O. S. Neill. October 24, 1924.

Applications for Patents

- Altenhein, C. R., and Klein, W. Separation of liquids from solids. 11,210. April 28.
- Barbet, E. A. Production of alcohol. 10,991. April 26.
- British Dyestuffs Corporation, Ltd., Hailwood, A. J., and Shepherdson, A. Preparation of indanthrone-disulphonic acids and indanthrone. 10,998. April 26.
- Carpmael, W. (I.G. Farbenindustrie Akt.-Ges.). Manufacture of azine dyestuffs. 11,319. April 29.
- Carpmael, W. (I.G. Farbenindustrie Akt.-Ges.). Manufacture of compounds of the naphthosultam series. 11,320. April 29.
- Carpmael, W. (I.G. Farbenindustrie Akt.-Ges.). Manufacture of leuco-oxyanthraquinones. 11,321. April 29.
- Crawford, J. W. C., and Willson, F. G. Production of hydroxylic compounds. 11,213. April 28.
- Davies, A., and Tayler, J. A. Manufacture of chemical dispersion agents. 11,331. April 29.
- Drummond, A. A. Synthetic resins. 10,914. April 26.
- Durand et Huguenin Soc. Anon. Manufacture of acid dyestuffs. 11,311. April 29. (Germany, May 4, 1925.)
- Folliet, A., and Petrole Synthetique Soc. Anon. Process of converting methane gas into hydrocarbons of higher carbon content. 11,291. April 29.

- Höganäs-Billesholms Aktiebolag. Production of aluminium oxide 11,077. April 27. (Sweden, May 27, 1925.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of sulphonc acids. 10,957. April 26. (Germany, May 7, 1925.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of solutions and plastics. 10,978. April 26. (Germany, April 24, 1925.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of motor fuel. 11,074. April 27. (Germany, May 8, 1925.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of condensation products containing sulphur. 11,084. April 27. (Germany, May 28, 1925.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of active carbon. 11,195. April 28. (Germany, April 28, 1925.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of disazo dyestuffs. 11,196. April 28. (Germany, April 28, 1925.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of therapeutic agents. 11,414. April 30. (Germany, May 1, 1925.)
- I.G. Farbenindustrie Akt.-Ges. Manufacture of azine dyestuffs. 11,319. April 29.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of compounds of the naphthosultam series. 11,320. April 29.
- I.G. Farbenindustrie Akt.-Ges. Manufacture of leuco-oxyanthraquinones. 11,321. April 29.
- I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of azo dyestuffs. 11,543. May 1.
- Kodak, Ltd. Electrodeposition of organic materials. 11,330. April 29. (United States, May 7, 1925.)
- Kodak, Ltd. Electrodeposition of organic materials. 11,415. April 30. (United States, June 8, 1925.)
- Maze, C. Delamare. Treatment of hydrocarbons. 11,078. April 27.
- Newport Co. Purification and isolation of anthraquinone beta sulphonc acid. 11,185. April 28. (United States, May 9, 1925.)
- Newport Co. Preparation of chlorohydroxy-anthraquinones. 11,551. May 1. (United States, November 2, 1925.)
- Roessler and Hasslacher Chemical Co. Carbonaceous material, etc. 11,423. April 30. (United States, May 9, 1925.)
- Schueler, G. R. Apparatus for hydrogenation of liquids, etc. 11,132. April 28.
- Soc. Anon. d'Explosifs et de Produits Chimiques. Treatment of gaseous distillates from hydrocarbons. 11,421. April 30. (France, May 1, 1925.)
- Soc. Anon. Métallurgique d'Aubrievs et Villers. Metallurgical apparatus. 11,345. April 29. (France, April 3.)
- Synthetic Ammonia and Nitrates, Ltd. Valves. 11,249. April 29.
- Synthetic Ammonia and Nitrates, Ltd. Effecting transfer of energy, etc. 11,357. April 30.
- Tcherniac, J. Separation and purification of vanillin. 11,083. April 27.
- Tinker, F. Distillation of crude oils. 11,212. April 28.

Germany's Fertiliser Capacity Increasing

GERMANY'S consumption of nitrogenous fertiliser has increased rapidly. From 210,000 tons of fixed nitrogen in the agricultural year 1913-1914, the amount consumed rose to 240,000 tons in 1923-24 and to 335,000 in 1924-25, according to the U.S. Assistant Commercial Attaché at Berlin. Notwithstanding the rapid advance in consumption, the development of the Haber-Bosch process has increased production at an ever greater rate. The present German capacity is estimated as follows: 350,000 tons of nitrogen in synthetic ammonium sulphate; 70,000 tons in the form of calcium cyanamide and calcium nitrate; and 75,000 tons from by-product coke ovens and gas works—a total of 495,000 tons of fixed nitrogen produced in Germany, and leaving a surplus of 160,000 tons available for export at the present rate of production and consumption. The production of ammonium sulphate, however, could be very largely increased. Under these circumstances it is, of great importance that German agriculture is able to maintain its consumption.

Canadian Cement Progress

THE Canadian mill output of cement during 1925 was 7,869,946 barrels, an increase of 101,294 barrels over the 1924 total. Shipments for the year showed an appreciable advance and totalled 8,116,597 barrels, valued at \$14,046,704. Cement is produced in Quebec, Ontario, Manitoba, Alberta, and British Columbia. There was formerly a production of puzzolan cement from blast furnace slag in Nova Scotia, but this has been discontinued in recent years. In 1925, Ontario was the leading producer, sales in that province amounting to 3,462,359 barrels. The average selling price per barrel, f.o.b. plant, was as follows: Quebec, \$1.69; Ontario, \$1.52; Manitoba, \$2.55; Alberta, \$2.31; and British Columbia, \$2.37. Importations for 1925 amounted to 21,849 barrels, averaging \$2.89 per barrel. Exports of Portland cement totalled 997,915 barrels, invoiced at \$1,498,495.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £37 per ton, Powder, £39 per ton.
 ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.
 BLEACHING POWDER.—Spot, £9 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
 CALCIUM CHLORATE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
 SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.
 SODIUM CHLORATE.—3d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4½d. to 5d. per lb. Crude 60's, 1s. 5d. to 1s. 6d.
 ACID CRESYLIC 97/99.—1s. 8d. to 1s. 9d. per gall. Pale, 95%, 1s. 6d. to 1s. 7d. per gall. Dark, 1s. 3d. to 1s. 4d. per gall. Steady.
 ANTHRACENE.—A quality, 3d. to 4d. per unit.
 ANTHRACENE OIL, STRAINED.—7d. to 8d. per gall. Unstrained, 6½d. to 7½d. per gall.
 BENZOL.—Crude 65's, 1s. 1d. to 1s. 3½d. per gall., ex works in tank wagons. Standard Motor, 1s. 8½d. to 1s. 11d. per gall., ex works in tank wagons. Pure, 1s. 10d. to 2s. 3d. per gall., ex works in tank wagons.
 TOLUOL.—90%, 1s. 9½d. to 2s. per gall. Pure, 2s. to 2s. 3d. per gall.
 XYLOL.—2s. to 2s. 6d. per gall. Pure, 3s. 3d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 9d. to 10d. per gall. Standard specification, middle oil, heavy, 6½d. to 7d. per gall.
 NAPHTHA.—Crude, 9d. to 1s. per gall. according to quality. Solvent 90/160, 1s. 5d. to 2s. per gall. Solvent 90/190, 1s. to 1s. 4d. per gall.
 NAPHTHALENE CRUDE.—Drained Creosote Salts, £3 10s. to £5 per ton. Whizzed or hot pressed, £5 10s. to £7 10s.
 NAPHTHALENE.—Crystals and Flaked, £11 10s. to £13 per ton, according to districts.
 PITCH.—Medium soft, 67s. 6d. to 70s. per ton, according to district. Nominal.
 PYRIDINE.—90/14b, 17s. to 19s. per gall. Heavy, 7s. to 10s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. 6d. per lb. 100%.
 ACID BENZOIC.—1s. 9d. per lb.
 ACID GAMMA.—8s. per lb.
 ACID H.—3s. 3d. per lb. 100% basis d/d.
 ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.
 ACID SULPHANILIC.—9d. per lb. 100% basis d/d.
 ANILINE OIL.—7d. per lb. naked at works.
 ANILINE SALTS.—7d. to 7½d. per lb. naked at works.
 BENZALDEHYDE.—2s. 1d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 o-CRESOL 29/31° C.—3d. to 3½d. per lb.
 m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb.
 p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb.
 DICHLORANILINE.—2s. 3d. per lb.
 DIMETHYLANILINE.—1s. 11d. to 2s. per lb. d/d. Drums extra.
 DINITROBENZENE.—9d. per lb. naked at works.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLANILINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—11d. to 1s. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.
 B-NAPHTHYLAMINE.—3s. 2d. per lb. d/d.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. 3d. per lb. d/d.
 p-NITRANILINE.—1s. 9d. per lb. d/d.
 NITROBENZENE.—5d. per lb. naked at works.
 NITRONAPHTHALENE.—10d. per lb. d/d.
 R. SALT.—2s. 4d. per lb. 100% basis d/d.
 SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.
 o-TOLUIDINE.—8d. per lb. naked at works.
 p-TOLUIDINE.—2s. 2d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.
 CHARCOAL.—£7 to £9 per ton, according to grade and locality.
 IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.
 RED LIQUOR.—9½d. to 1s. per gall.
 WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 6d. per gall. 60% O.P. Solvent, 3s. 6d. per gall. 40% O.P.
 WOOD TAR.—£3 to £5 per ton, according to grade.
 BROWN SUGAR OF LEAD.—£39 to £40 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—2s. per lb.
 BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
 CADMIUM SULPHIDE.—2s. 9d. per lb.
 CARBON BISULPHIDE.—£20 to £25 per ton, according to quality.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quality, drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.
 LAMP BLACK.—£35 per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPONE, 30%.—£22 10s. per ton.
 MINERAL RUBBER "RUBFRON".—£13 12s. 6d. per ton f.o.r. London.
 SULPHUR.—£9 to £11 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. per lb., carboys extra.
 SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—5s. 3d. per lb.
 ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb. Keen competition met.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; Powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 4d. to 1s. 4½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—6s. 7d. per lb. Resublimed, 7s. 3d.

ACID, SALICYLIC.—1s. 3½d. to 1s. 4½d. per lb. Technical.—10½d. per lb.

ACID, TANNIC B.P.—2s. 10d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.

AMIDOL.—6s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—12s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—10s. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 6d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 6d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. 3d. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 9d. to 12s. 6d. per lb. according to quantity.

BORAX B.P.—Crystal, £27; Powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 8½d. to 1s. 11d. per lb.; sodium, 1s. 11d. to 2s. 2d. per lb.; ammonium, 2s. 2d. to 2s. 5d. per lb., all spot.

CALCIUM LACTATE.—1s. 2½d. to 1s. 4d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CRESOTE CARBONATE.—6s. per lb.

FORMALDEHYDE.—£40 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—7s. 6d. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 vols.).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. 3d. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 1d. to 2s. 4d. per lb.

MAGNESIUM CARBONATE.—Light Commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%; price reduced; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 20s. net per lb., Synthetic, 12s. to 15s. per lb., according to quality.

MERCURIALS.—Red oxide, 5s. 8d. to 5s. 10d. per lb.; Corrosive sublimate, 4s. to 4s. 2d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 4s. 3d. to 4s. 5d. per lb.

METHYL SALICYLATE.—1s. 7d. per lb.

METHYL SULPHONAL.—16s. 6d. per lb.

METOL.—9s. per lb. British make.

PARAFORMALDEHYDE.—1s. 11d. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—4s. to 4s. 3d. per lb.

PHENAZONE.—6s. to 6s. 3d. per lb.

PHENOLPHTHALEIN.—4s. to 4s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb. in cwt. lots. Quiet.

POTASSIUM IODIDE.—16s. 8d. to 17s. 5d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., in 100 oz. tins.

RESORCIN.—4s. to 5s. per lb., spot.

SACCHARIN.—55s. per lb.

SALOL.—3s. per lb.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 9d. to 1s. 10d. per lb. Crystal, 1s. 10d. to 1s. 11d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—11s. 6d. per lb. Limited demand.

TARTAR EMETIC, B.P.—Crystal or Powder, 1s. 10d. to 2s. per lb.

THYMOL.—12s. to 13s. 9d. per lb.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—9s. 6d. per lb.

AMYL ACETATE.—3s. per lb.

AMYL BUTYRATE.—6s. 6d. per lb.

AMYL SALICYLATE.—3s. 3d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 3d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 3d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 9d. per lb.

CINNAMIC ALDEHYDE NATURAL.—18s. 6d. per lb.

COUMARIN.—11s. 9d. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—9s. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—9s. 6d. per lb.

GERANIOL (PALMAROSA).—19s. 3d. per lb.

GERANIOL.—7s. to 16s. per lb.

HELIOTROPINE.—6s. per lb.

ISO EUGENOL.—14s. per lb.

LINALOL EX BOIS DE ROSE.—19s. per lb.

LINALYL ACETATE.—18s. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—5s. per lb.

MUSK KETONE.—34s. 6d. per lb.

MUSK XYLOL.—8s. per lb.

NEROLIN.—4s. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 6d. per lb.

RHODINOL.—27s. 6d. per lb.

SAFROL.—1s. 8d. per lb.

TERPINOL.—1s. 6d. per lb.

VANILLIN.—21s. 6d. to 23s. per lb.

Essential Oils

ALMOND OIL.—12s. 6d. per lb.

ANISE OIL.—3s. 1d. per lb.

BERGAMOT OIL.—30s. 6d. per lb.

BOURBON GERANIUM OIL.—11s. 3d. per lb.

CAMPHOR OIL.—60s. per cwt.

CINNAMON OIL, LEAF.—5d. per oz.

CASSIA OIL, 80/85%.—9s. 6d. per lb.

CITRONELLA OIL.—Java, 85/90%, 3s. Ceylon, 2s. per lb.

CLOVE OIL.—6s. 6d. per lb.

EUCALYPTUS OIL, 70/75%.—1s. 10d. per lb.

LAVENDER OIL.—French 38/40%, Esters, 21s. 6d. per lb.

LEMON OIL.—9s. per lb.

LEMONGRASS OIL.—4s. 9d. per lb.

ORANGE OIL, SWEET.—11s. 9d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 65s. per oz. Anatolian, 40s. per oz.

PALMA ROSA OIL.—12s. per lb.

PEPPERMINT OIL.—Wayne County, 65s. per lb. Japanese, 11s. per lb.

PETITGRAIN OIL.—9s. per lb.

SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, May 27, 1926.

TRADE during the current week has been extremely slow, due of course to the prevailing holiday period and the present industrial situation. Many consuming works in the country have taken the opportunity of shutting down for the entire week as a precautionary measure. The business that is passing is of small dimensions and for spot positions. Prices maintain their levels remarkably well and this in view of the present paucity of demand shows that in the event of any expansion of the general demand prices must increase. On the other hand the export demand is improving and there is quite a good volume of inquiry on the market and some satisfactory business has been transacted.

General Chemicals

ACETONE.—There is little improvement in this product and the market is unchanged at from £81 to £82 per ton.
ACID ACETIC is quite active and prices are unchanged at £37 to £39 for technical 80%, and £38 to £40 per ton for the pure.
ACID FORMIC continues slow of sale, but price is maintained at £48 per ton for 85%.
ACID LACTIC continues fairly quiet, but the price is well maintained at £43 10s. per ton for 50% by weight.
ACID OXALIC.—The demand for this material is still very disappointing, but the price is firm at 3½d. per lb.
ACID TARTARIC continues quiet at 11½d. per lb.
ALUMINA SULPHATE is somewhat more active and the price is unchanged at £5 15s. per ton.
AMMONIUM CHLORIDE continues weak and what little business has been transacted has been put through at round about £18 per ton.
ARSENIC.—There appears to be a little more inquiry, but the price has not yet responded; the nominal figure is £14 per ton.
BARIUM CHLORIDE is quietly steady at £10 to £11 per ton, with demand perhaps slightly better.
EPSOM SALTS are firm and unchanged at £5 15s. per ton.
FORMALDEHYDE is firm and there is a better demand at £41 to £42 per ton.
IRON SULPHATE.—Unchanged.
LEAD ACETATE has been very active, particularly on export account; quotations are £45 to £46 per ton for White and from £1 10s. per ton less for the Brown quality.
METHYL ALCOHOL is in quiet demand at £45 per ton.
METHYL ACETONE.—This product is very firm with very small stocks upon which to work and the price is quiet at £57 per ton.
POTASSIUM CARBONATE AND CAUSTIC.—Unchanged.
POTASSIUM CHLORATE continues firm and price is unchanged at 4d. per lb.
POTASSIUM PERMANGANATE is in good demand at 6½d. to 6¾d. per lb.
POTASSIUM PRUSSIAN is unchanged at 7d. to 7¼d. per lb., with a good demand.
SODIUM ACETATE continues scarce and spot price is £22 per ton, and for forward a slightly reduced figure may be obtained.
SODIUM BICHROMATE is unchanged at British makers' figures.
SODIUM NITRITE is in very small demand and price is nominally unchanged at £21 per ton.
SODIUM PHOSPHATE is in fair demand at £14 per ton.
SODIUM PRUSSIAN continues in fair request and the price is from 3¾d. to 4d. per lb.
SODIUM SULPHIDE.—Unchanged at British makers' figures, and the demand leaves a good deal to be desired.
ZINC SULPHATE continues quite a fair market at £14 per ton.

Coal Tar Products

The General Strike is now having a considerable effect on prices, inasmuch as supplies of Coal Tar products are only available in this country in very limited quantities, and what materials are being offered are principally of foreign manufacture.
90's BENZOL is quoted at 2s. per gallon on rails.
PURE BENZOL is quoted at 2s. 6d. per gallon on rails, for prompt delivery. No forward quotation is now obtainable.
CREOSOTE OIL shows a tendency to harden. The price on rails in the Provinces is about 6½d. per gallon, while in London the price is in the region of 7¼d. per gallon.
CRESYLIC ACID.—There is a keen demand for this material, and the price has advanced by fully 3d. per gallon for both grades.

The Pale quality 97/99% is now quoted at 2s. per gallon naked on rails, and 95/97% quality can be obtained at 1s. 10d. per gallon, under the same conditions.

SOLVENT NAPHTHA is in very small demand, the price being in the region of 1s. 6d. per gallon.

HEAVY NAPHTHA is steady at 1s. 1d. per gallon.

NAPHTHALENES.—Prices have advanced considerably in all grades.

There is considerable demand for hot pressed 76/78° melting point at a price in the neighbourhood of £6 10s. per ton, f.o.b. Continental port.

PITCH is inactive and prices remain more or less nominal at 70s. to 75s. per ton, f.o.b. U.K. ports.

Latest Oil Prices

LONDON.—LINSEED OIL firm but quiet at occasionally 2s. 6d. to 5s. advance. Spot, £29 15s., ex mill; June-August, £30; September-December, £30 12s. 6d. RAPE OIL nominal. Crude extracted, £49; technical refined, £51. COTTON OIL, firm and 20s. higher. Refined common edible, £43; Egyptian, crude, £38; deodorised, £45. TURPENTINE steady but quiet. American, spot, 64s., June, 62s. 6d.; and July-December, 60s. 3d. per cwt.

HULL.—LINSEED OIL.—Spot, £30 15s.; June-August, £30 12s. 6d.; September-December, £30 17s. 6d. per ton, naked. COTTON OIL.—Bombay crude, £36; Egyptian crude, £38 5s.; edible refined, £42; technical, £40 per ton, naked. CASTOR OIL unchanged. PALM KERNEL OIL, crushed, naked, 5½ per cent., £43 10s. GROUNDNUT OIL, crushed/extracted, £45; deodorised, £49. SOYA OIL, extracted, £36 10s.; crushed, £36 10s.; deodorised, £40. RAPE OIL, crushed/extracted, £48; refined, £50. COD OIL unaltered.

Nitrogen Products Market

Export.—As usual during May the price of sulphate of ammonia has been steadily reduced. End of April shipment finds the price at the highest level, on account of the small quantities available for export, as the home demand is then at its height. May and the following months find the home demand dwindling to almost nothing with consequent low prices for export. The present prices range from £10 15s. to £11 per ton f.o.b. U.K. port, in single bags. On account of the coal stoppage supplies of sulphate of ammonia from the United Kingdom are not available in large quantities, but continental producers are selling freely at these prices.

Home.—Home prices remain unchanged. The bulk of British producers have not made any reduction for June delivery on account of the uncertainty of quantities available. It is expected, therefore, that the present price of £13 1s. per ton delivered to farmers' station for neutral quality, basis 21.1 per cent. nitrogen, will be continued at any rate until mid-June.

Nitrate of Soda.—The nitrate position remains unchanged. It seems likely that the sluggishness in May demand will result in considerable stocks being carried over into the new fertiliser year. As producers have agreed to the writing down of unsold stocks to the new price level, current quotations remain unchanged. Shipments for prompt arrival are changing hands on the basis of £11 7s., to £11 11s. per ton chief European port. The new nitrate scale shows little change on that of last year.

Calcium Cyanamide

A GOOD deal of interest is being shown in certain quarters in the use of this material for the destruction of charlock. On the continent calcium cyanamide has largely been used for this purpose for many years past with satisfactory results. Calcium cyanamide contains 19 per cent. nitrogen and about 60 per cent. lime. The price to British farmers for May delivery is £10 6s. per ton for four ton lots, carriage paid to any railway station.

Potash Fertilisers

DELIVERIES of fertilisers which were suspended owing to the strike are now being effected, but the season for the application of potash fertilisers is practically ended. There is, however, a demand for finely ground kainit for the destruction of charlock. Charlock in the spring-sown corn crops is now reaching the stage at which the treatment with finely-ground kainit should be given and deliveries of the material, on a fairly large scale, are being effected.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, May 26, 1926.

BUSINESS has been fairly satisfactory during the past week, but until the coal dispute is settled there is not likely to be any large movement. One or two important manufacturers have already closed down considerable portions of their plant. Continental offers continue to be received and prices named therein are rather lower than those given before the recent strike. Prices for British products remain practically unchanged.

Industrial Chemicals

- ACID ACETIC, 98/100%.—£55 to £67 per ton, according to quantity and packing c.i.f. U.K. ports; 80% pure, £39 to £41 per ton; 80% technical, £38 to £39 per ton.
- ACID BORIC.—Crystal, granulated or small flakes, £37 per ton; powdered, £39 per ton packed in bags, carriage paid U.K. stations.
- ACID CARBOLIC, ICE CRYSTALS.—In moderate demand. Quoted 4½d. per lb., delivered or f.o.b. U.K. ports.
- ACID CITRIC, B.P. CRYSTALS.—Spot material on offer at 1s. 3d. per lb., less 5%, ex wharf. Rather cheaper to come forward.
- ACID FORMIC, 85%.—Quoted about £50 per ton, ex wharf, early delivery. Offered from the Continent at £49 per ton, c.i.f. U.K. ports.
- ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.
- ACID NITRIC 80%.—Remains unchanged at £23 5s. per ton, ex station, full truck loads.
- ACID OXALIC, 98/100%.—On offer from the Continent at 3½d. per lb., c.i.f. U.K. ports, duty paid. Spot material quoted 3½d. to 3½d. per lb., ex store.
- ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.
- ACID TARTARIC, B.P. CRYSTALS.—Quoted 11½d. per lb., less 5%, ex wharf, early delivery.
- ALUMINA SULPHATE, 17/18% IRON FREE.—On offer from the Continent at about £5 8s. 6d. per ton, c.i.f. U.K. ports. Spot material quoted £6 5s. per ton, ex store.
- ALUM POTASH, LUMP.—Spot material quoted £9 per ton, ex store. On offer from the Continent at about £7 15s. per ton, c.i.f. U.K. ports. Crystal powder quoted about £7 10s. per ton, c.i.f. U.K. ports.
- AMMONIA ANHYDROUS.—Imported material selling at about 11½d. to 11½d. per lb. ex wharf, containers extra and returnable.
- AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.
- AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb. delivered, according to quantity.
- AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £25 10s. per ton, ex station. Continental on offer at about £21 10s. per ton, c.i.f. U.K. ports. Fine white crystals of Continental manufacture quoted £18 5s. per ton, c.i.f. U.K. ports.
- ARSENIC, WHITE POWDERED CORNISH.—Quoted £15 15s. per ton, ex wharf, early delivery. Spot material on offer at about £16 10s. per ton, ex store.
- BARIUM CHLORIDE, 98/100%.—Quoted £8 15s. per ton, c.i.f. U.K. ports. Prompt shipment from the Continent. Spot material on offer at about £10 10s. per ton, ex store.
- BLEACHING POWDER.—English material unchanged at £9 10s. per ton, ex station. Contracts 20s. per ton less. Continental on offer at about £7 10s. per ton, c.i.f. U.K. ports.
- BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.
- BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton, carriage paid U.K. stations.
- CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental quoted £4 per ton, c.i.f. U.K. ports.
- COPPERAS, GREEN.—In moderate demand for export, quoted £3 17s. 6d. per ton, c.i.f. U.K. ports. On offer for home consumption at about £3 10s. per ton, f.o.r. works.
- COPPER SULPHATE, 99/100%.—English material unchanged at about £23 10s. per ton, f.o.b. U.K. ports. Continental on offer at about £22 per ton, ex wharf.
- FORMALDEHYDE, 40%.—Unchanged at about £37 per ton, c.i.f. U.K. ports, prompt shipment. Spot material available at about £38 per ton, ex store.
- GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental on offer at about £3 5s. per ton, c.i.f. U.K. ports.

- LEAD, RED.—Imported material on offer at about £36 10s. per ton ex store.
- LEAD, WHITE.—Quoted £38 per ton ex store.
- LEAD ACETATE.—White crystals from the Continent at about £44 per ton, c.i.f. U.K. ports, prompt shipment. Brown about £38 15s. per ton, c.i.f. U.K. ports.
- MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton ex store, in moderate demand.
- POTASH CAUSTIC 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton, c.i.f. U.K. ports, according to quantity and destination. Spot material available at about £29 per ton ex store.
- POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb. delivered.
- POTASSIUM CARBONATE.—96/98% quoted £25 5s. per ton ex wharf, early delivery. Spot material on offer at £26 10s. per ton ex store; 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.
- POTASSIUM CHLORATE 98/100%.—Offered from the Continent at about £27 10s. per ton, c.i.f. U.K. ports.
- POTASSIUM NITRATE (SALTPETRE).—Quoted £22 per ton, c.i.f. U.K. ports, prompt shipment. Spot material available at about £24 10s. per ton ex store.
- POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 7½d. per lb. ex store, spot delivery. To come forward, 7d. per lb. ex wharf.
- POTASSIUM PRUSSIAN (YELLOW).—Quoted 7½d. per lb. ex store, spot delivery. Offered from the Continent at 7½d. per lb. ex wharf.
- SODA CAUSTIC.—76/77%, £17 10s. per ton; 70/72%, £16 2s. 6d. per ton; broken 60%, £16 12s. 6d. per ton; powdered 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.
- SODIUM ACETATE.—Spot material scarce, but limited supplies available at £20 10s. per ton ex store, quoted £19 15s. per ton c.i.f. U.K. ports.
- SODIUM BICARBONATE.—Refined recrystallised quality £10 10s. per ton ex quay or station. M.W. quality 30s. per ton less.
- SODIUM BICHROMATE.—English price unchanged at 3½d. per lb. delivered.
- SODIUM CARBONATE.—Soda Crystals, £5 to £5 5s. per ton, ex quay or station. Powdered or pea quality £1 7s. 6d. per ton more; alkali 58%, £8 12s. 3d. per ton ex quay or station.
- SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton ex store, minimum 4-ton lots. Pea crystals £14 10s. per ton ex station. Continental commercial on offer at about £7 15s. per ton, c.i.f. U.K. ports.
- SODIUM NITRATE.—Quoted £13 per ton ex store. 96/98% refined quality 7s. 6d. per ton extra.
- SODIUM NITRITE 100%.—Quoted £24 per ton ex store. Offered from the Continent at about £22 5s. per ton, c.i.f. U.K. ports.
- SODIUM PRUSSIAN (YELLOW).—Spot material now on offer at 4½d. per lb. ex store. Quoted 4d. per lb. ex wharf, early shipment from the Continent.
- SODIUM SULPHATE, SALTCAKE.—Price for home consumption £3 10s. per ton ex works. Good inquiry for export and higher prices obtainable.
- SODIUM SULPHIDE 60/62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyers' works, U.K., minimum 5-ton lots, with slight reduction for contracts. 60/62% solid quality offered from the Continent at about £9 15s. per ton, c.i.f. U.K. ports. Broken 15s. per ton more. Crystals, 30/32%, £7 per ton, c.i.f. U.K. ports.
- SULPHUR.—Flowers, £11 10s. per ton; roll, £10 5s. per ton; rock, £10 5s. per ton; ground, £9 15s. per ton, ex store, spot delivery. Prices nominal.
- ZINC CHLORIDE.—British material, 96/98%, quoted £23 15s. per ton f.o.b. U.K. port. 98/100% solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.
- ZINC SULPHATE.—Continental manufacture on offer at about £11 per ton ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

- BENZALDEHYDE.—2s. 1½d. per lb. Some home inquiries.
 - BETA NAPHTHOL.—11d. to 1s. per lb. Some home inquiries.
 - PARANITRANILINE.—1s. 9d. per lb. Some home inquiries.
 - ALPHA NAPHTHOL.—2s. per lb. Small home inquiries.
- The market at the moment is very quiet and inquiries are for small quantities only.

Company News

CASSEL CYANIDE.—The directors announce an interim dividend of 3d. per share.

LONDON NITRATE Co., LTD.—An interim dividend of 1s. 6d. per share, tax free, is announced.

ANGELA NITRATE Co.—A final dividend of 15 per cent., making a total of 25 per cent. for 1925, is announced.

ALLEN LIVERSIDGE, LTD.—A dividend at the rate of 6½ per cent. per annum, less tax, for the six months ended April 30, has been declared on the preference shares.

PARK GATE IRON AND STEEL Co.—The profit for the year to March 31 last amounts to £51,026, which reduces the adverse balance brought forward to £66,296.

SCOTTISH OILS, LTD.—The directors have resolved to pay a final dividend of 3½ per cent. on the preference shares, less tax, in respect of the year ended March 31 last.

"SANITAS," LTD.—The directors have declared a final dividend of 4½ per cent., making a total of 9 per cent. on the 9 per cent. cumulative preference shares, payable on and after June 1.

FULLERS' EARTH UNION.—It is announced that the directors propose to capitalise £24,625 of the reserve fund and to distribute it among the ordinary shareholders as a cent. per cent. share bonus.

PUMPHRESTON OIL Co.—After providing for depreciation and crediting £40,000 from reserve and meeting the preference dividend a balance of £40,289 remains to be carried forward. No ordinary dividend is to be paid this year.

BEDE METAL AND CHEMICAL Co.—The accounts for the past year show a loss, after payment of £2,806 for interest on bank overdraft of £4,214, to which is added the debit balance brought forward, making a total debit of £50,785.

OAKBANK OIL Co.—No dividend is recommended on the ordinary shares. There is a balance of £16,751 to be carried forward after payment of the preference dividend and writing off £2,000 for depreciation and crediting £31,940 from reserve.

TARAPACA AND TOCOPILLA NITRATE Co.—Owing to the serious position of the nitrate industry the directors report that they have reluctantly come to the decision not to recommend the payment of any dividend in respect of the year 1925.

CRAIG AND ROSE, LTD.—After providing for income tax, depreciation and directors' fees, the profits amount to £12,156. A dividend is proposed on the ordinary shares at the rate of 5 per cent. per annum, free of tax, and £6,727 is carried forward.

BROXBURN OIL Co.—After payment of the preference dividend and writing off £2,000 for depreciation and taking into account £24,000 transferred from reserve there remains £14,538 to be carried forward. No dividend is to be paid on the ordinary shares.

YORKSHIRE DYEWARE AND CHEMICAL Co.—The trading profits for the year ended March 31 were £11,685, and £10,015 was brought forward. A final dividend of 7½ per cent. is proposed, making 10 per cent. for the twelve months, and £5,596 is carried forward.

AMALGAMATED PHOTOGRAPHIC MANUFACTURERS.—After charging interest and providing £8,243 for depreciation, the net profit for 1925 is £20,976, which is carried forward, all arrears of preference dividend to December 1, 1925, having been cancelled under the recent reorganisation scheme.

ANGLO-AMERICAN OIL Co., LTD.—The company has resolved to pay a final dividend of 2s. 6d. per share, free of tax in the United Kingdom, which, with the interim dividend of 1s. 6d. per share declared on December 3 last, will make a total dividend of 20 per cent. for the year ending December 31, 1925.

PARKES CHEMISTS.—After allowing for depreciation of leases the profit for the past year amounted to £8,571, and £1,348 was brought forward. The directors propose to pay a final dividend of 5 per cent., less tax, on the ordinary shares, making 7½ per cent. for the year, carrying £1,021 forward.

A. B. FLEMING AND Co.—Including the sum of £11,691 brought in the amount at the credit of profit and loss account for the year ended April 30 last is £49,529. A final dividend of 10 per cent. is proposed, making 15 per cent. for the twelve months; £10,000 is added to the new plant fund and £6,000 to the reserve, carrying forward £15,529.

AGUAS BLANCAS NITRATE Co.—After providing for income tax, debenture charges, etc., the net profit for 1925 is £40,339, compared with £40,364 for the previous year. An interim dividend has been paid, but in view of the critical position of the nitrate industry the directors state that they do not feel justified in recommending the payment of a balance dividend.

TARSLAG (1923).—The report for the year ended December 31 last shows a trading profit of £29,358, against £33,849 for the previous eighteen months. After deducting the amount required for the payment of the dividend on the 8 per cent. cumulative preference shares, directors' fees, and £5,000 placed to reserve, the amount carried forward is £4,073, against £3,416 last year.

WRIGHT, LAYMAN AND UMNEY, LTD.—For the year ended December 31 last the report states that after providing for staff bonus, bad debts, etc., there is a trading profit, including income from investments, of £33,015, to which is added £6,601 brought forward. A final dividend of 15 per cent. and a bonus of 10 per cent. are proposed on the ordinary shares, making 35 per cent. for the year, carrying forward £5,960.

ARIZONA COPPER Co.—The report for the year to March 31 last states that the dividends on the company's holding in the Phelps-Dodge Corporation, bank interest and transfer fees during the year amounted to £46,037. After deducting expenses there is a surplus of £34,134, plus £1,866 brought in, and the directors have transferred from reserve £64,000, making an available total of £100,000. It is proposed to pay a dividend for the year on the ordinary shares of 1s. 3d. per share, free of tax, of which 9d. has been already paid, and £5,007 is carried forward.

NATIONAL DRUG AND CHEMICAL OF CANADA Co.—The report for the year ended January 31, 1926, states that after paying all expenses and providing for bad debts a profit is shown of \$45,112, or £9,269, as compared with a loss of \$33,376, or £6,858, in the previous year. The surplus of assets over liabilities on January 31, 1926, was \$3,632,136, or £746,329, which is equivalent for each outstanding £1 cumulative first preference share to £1 13s. 11½d. on January 31. After deducting from the surplus the total outstanding cumulative first preference shares at par, the balance is equivalent for each outstanding \$100 7 per cent. preference share to \$114.69 on January 31.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to June 5, 1926.

"ERIKA."

466,630 and 466,631.—For dyes, Class 4. I. G. Farbenindustrie Aktiengesellschaft (a joint stock company organised under the laws of Germany), Mainzer Landstrasse 28, Frankfurt-on-Main, Germany, manufacturers. January 29, 1926.

"TENNAX."

466,372.—For vegetable fibre, raw or partly prepared, for use in manufacturers. Class 4. J. and J. Colman, Ltd., Carrow Works, Norwich, and 108, Cannon Street, London, E.C.4, mustard, starch, and cornflour and blue manufacturers, millers and merchants. January 22, 1926. (By consent.)

Opposition to the Registration of the following Trade Marks can be lodged up to June 12, 1926.

"ELEKTROPHIT."

468,005. For electric and galvanic carbons, and graphite, raw or partly prepared, for use in manufactures. Class 4. The firm trading as C. Conradt, 9, Spittlertorgabem Nurnberg, Germany; manufacturers. March 11, 1926. (To be Associated. Sect. 24.)

"LANCHEMIN."

467,604. For chemical substances used for agricultural, horticultural, veterinary and sanitary purposes. Class 2. William Henry Watson, trading as The Lancashire Chemical and Mineral Co., County Buildings, 4, Cannon Street, Manchester; merchant. February 27, 1926. (To be Associated. Sect. 24.)

The
"VITREOSIL"
System of **HYDROCHLORIC
ACID ABSORPTION**

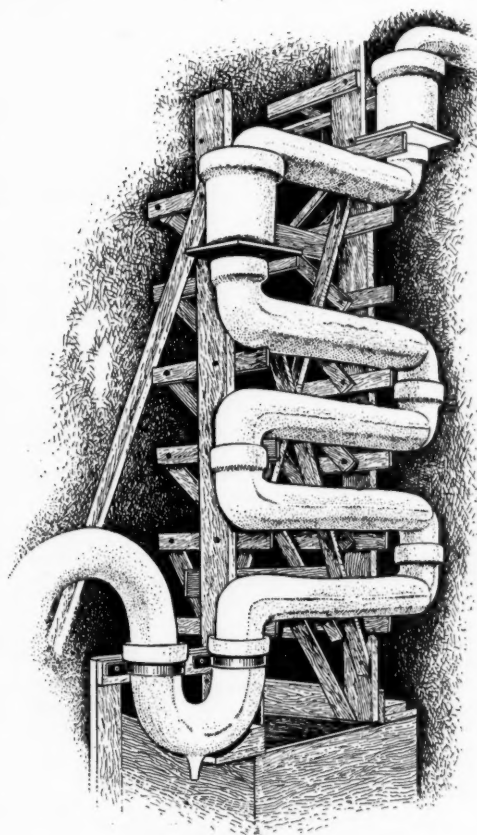
THESE VESSELS set up
Vertically one above the other
can be thoroughly Water Cooled.

Economies of Floor Space and
Efficiency of Operation are
secured. There are no submerged
joints.

In this System an intimate contact
of the gas with the liquid is secured
by means of the liquid curtain
formed by the drops falling from
the central depression and through
which all the gas must pass.

Let us know your Problems

WRITE FOR DESCRIPTIVE
LITERATURE



COLUMN OF "VITREOSIL" ABSORPTION VESSELS.

Specialists in Chemical Works Plant.

Manufacturers of VITREOSIL.

THE THERMAL SYNDICATE, Ltd.
VITREOSIL WORKS
WALLSEND-ON-TYNE, ENGLAND

London Depot: 28 Victoria Street, London, S.W.1

And at New York and Paris

Telephone Nos. 42 & 43 Wallsend.

Telegrams: "Thermal, Wallsend."

ABC Code, 5th and 6th Editions, and Bentley's used.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CHEMICALS AND DRUGS.—An agent in Vienna wishes to represent British manufacturers of above. (Reference 546.)

CHEMICALS, ETC.—A well-established European firm of merchants and manufacturers' representatives in Calcutta desire to secure additional representation for drugs, chemicals and artificial silk. (Reference No. 571.)

PIGMENTS, ETC.—A chemical and pigment broker in Montreal selling direct to manufacturers of paints, varnish and paper and printing inks desires to represent, on commission, British manufacturers or exporters of bases, solvents, plasticisers, ester gum, ultramarine, zinc oxide and lithopone. (Reference No. 572.)

TANNING AND COLOURING MATERIALS.—A United States firm desires to get into touch with British manufacturers of above for the sale of their products in New England, New York State, and New Jersey. (Reference No. 593.)

VARNISHES, ETC.—An important Indian firm in Karachi desires the representation of British manufacturers of the above. (Reference No. 598.)

ARTIFICIAL SILK.—A textile merchant established in Stockholm wishes to obtain the representation of British artificial silk manufacturers. (Reference No. 632.)

CHEMICALS, ETC.—A Swiss agent in Basle wishes to secure the agency of British manufacturers for the whole of Switzerland for mineral lubricants, oils, benzene, chemicals, and raw materials for the chemical industry. Correspondence in English. (Reference No. 633.)

SOAPS, ETC.—A manufacturer's agent in Toronto selling druggists' sundries desires to take up British agencies for the above. (Reference No. 604.)

LINSEED OIL.—H.M. Senior Trade Commissioner for South Africa reports that the South African Railways and Harbours administration is calling for tender, for presentation by July 8, 1926, for the supply of 29,500 gallons of raw linseed oil and 42,900 gallons of boiled linseed oil (Tender No. 827). British firms desiring further information should apply as above.

HEAVY CHEMICALS, ETC.—A firm in Porto Alegre is desirous of getting into touch with British exporters of heavy chemicals, window glass and papers of all kinds. (Reference No. 691.)

An old-established firm in Scotland desires to represent manufacturers of industrial chemicals, iron and steel, machine beltings and engineers' supplies. The entire Scotch market could be looked after as well as inquiries for export. Firms interested should communicate with the Editor of THE CHEMICAL AGE, 8, Bouverie Street, London, E.C.4.

New Companies Registered

CANDLES (OVERSEAS), LTD., 22, Great St. Helens, London, E.C.3. Registered May 25, 1926. Producers, dealers and distributors of candles, nightlights, oils, greases, glycerine, soap, etc. Nominal capital, £1,000 in £1 shares.

NEW ZEALAND FORESTS, LTD. Registered as a "public" company on May 20, 1926. Timber and lumber merchants; tannin extractors, manufacturers of, and dealers in, dyes, paints, oils, drugs, and chemical substances, etc. Nominal capital, £50,000 in 5s. shares. Solicitors: Ashurst, Morris, Crisp and Co., 17, Throgmorton Avenue, London, E.C.

TARGOLD (SCOTLAND), LTD., 219, West George Street, Glasgow. Registered in Edinburgh on May 19, 1926. Manufacturers and dealers in chemicals, ores, tars, metals, minerals, etc. Nominal capital, £2,000 in 1,000 ordinary shares and 1,000 preference shares of £1 each.

WILKINSON AND SCOTT, LTD., 2, Lower Cobden Street, Longside Lane, Bradford. Registered May 19, 1926. Dye-ware, chemical and soap merchants and manufacturers; agents for dyeing, chemical and soap industry, etc. Nominal capital, £6,000 in £1 shares.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

FRESOL CO., LTD., London, E.C., manufacturers of disinfectants, etc. (M., 29/5/26.) Registered April 30, £150 debenture, to J. F. Blair and Co., Ltd., Cromwell House, Fulwood Place, W.C., engineering contractors; general charge. *Nil. May 23, 1925.

INTERNATIONAL CHEMICAL CO., LTD. (late INTERNATIONAL CHEMICAL LABORATORIES, LTD., London, N.W. (M., 29/5/26.) Registered April 27, £90,000 debentures; general charge. *Nil. May 26, 1925.

RAPIDOL, LTD., London, W., manufacturers of hair dyes, etc. (M., 29/5/26.) Registered April 24, charge to Bank; charged on 32, Dover Street, W. *— April 2, 1925.

Satisfactions

CARTER (A. H.) LTD., London, E.C., manufacturers of chemical manures, etc. (M.S., 29/5/26.) Satisfaction registered May 10, £1,783 16s. 4d., part of amount registered May 30, 1922.

NORDEN BLEACHING CO., LTD. (M.S., 29/5/26.) Satisfaction registered April 21, £2,500, registered December 19, 1923.

WILLIAMS (JOHN E.) AND CO., LTD., Manchester, paint manufacturers. (M.S., 29/5/26.) Satisfaction registered April 28, £2,500, registered October 22, 1920.

London Gazette, &c.

Companies Winding Up Voluntarily

AUSTRALIAN EXPLOSIVES CHEMICAL CO., LTD. (C.W.U.V., 29/5/26.) By Special Resolution, April 26, confirmed, May 11. R. W. Liddell, Nobel House, Buckingham Gate, London, S.W.1, appointed liquidator.

EAST ANGLIAN CHEMICAL CO., LTD. (C.W.U.V., 29/5/26.) A. Sutcliffe, Queen Street Chambers, Peterborough, Accountant, appointed liquidator, May 10.

IONA LABORATORIES LTD. (C.W.U.V., 29/5/26.) G. McNeill, F.C.R.A., F.I.S.A., Corporate Accountant and Auditor, 2, Marsden Street, Manchester, appointed liquidator, May 10.

RETFIELD MANUFACTURING CO., LTD. (C.W.U.V., 29/5/26.) A. J. Gardner, of Lawrence Gardner and Co., Chartered Accountants, 5, Unity Street, Bristol, appointed liquidator, May 3.

Order Made on Application for Discharge

BOWEN, Evan Morgan, Penhydd, Blundell Avenue, Porthcawl, Glamorgan, chemical engineer. (O.M.A.D., 29/5/26.) Date of Order, April 27.

Notice of Dividend

HAMLEY, John H., and TURLE, Douglas, trading as COMPAGNIE JUVENILEAU, 97, Cannon Street, London, perfume merchants. Amount per £—2½d. First or final, or otherwise—Supplemental dividend, 2½d. per £, payable, Bankruptcy Buildings, Carey Street, London, W.C.2.

Notice of Intended Dividend

ALLEN, Percy Thomas, 122, Whirlowdale Road, Sheffield, chemical engineer. Last day for receiving proofs, June 2. Trustee, L. J. Clegg, Official Receiver's offices, 14, Fig Tree Lane, Sheffield.

